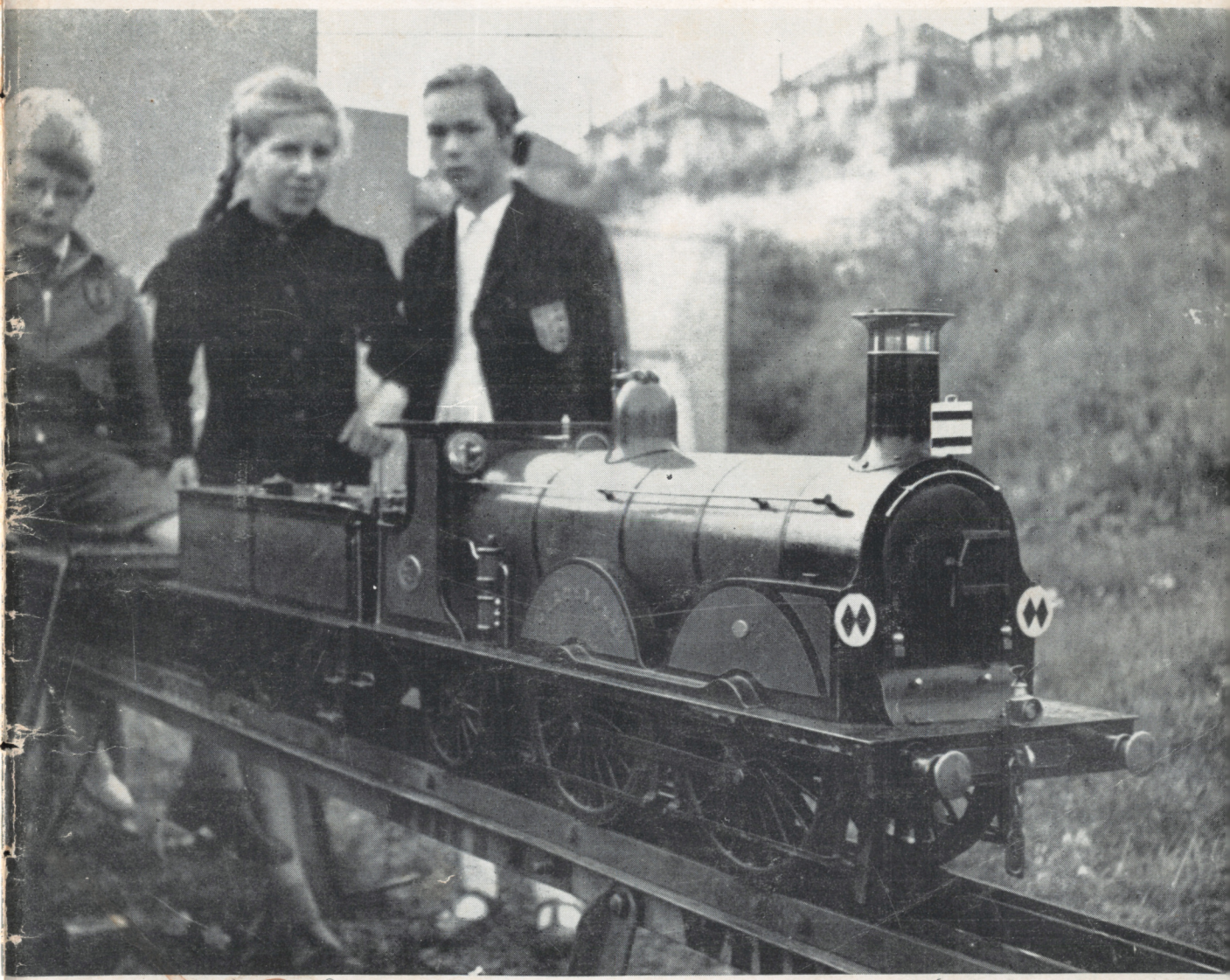
ONE SHILLING

The MODEL RAILWAY NEWS

VOL 28 No. 331 JULY 1952



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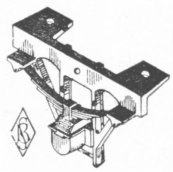

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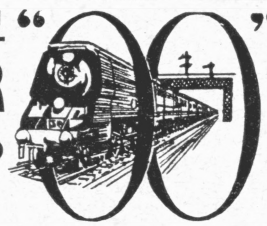

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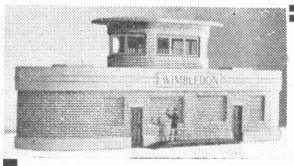

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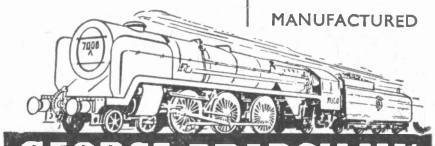

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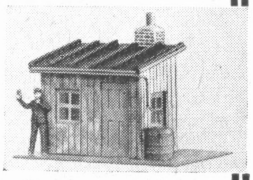

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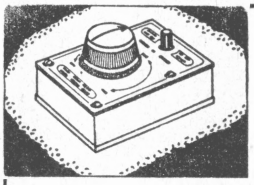

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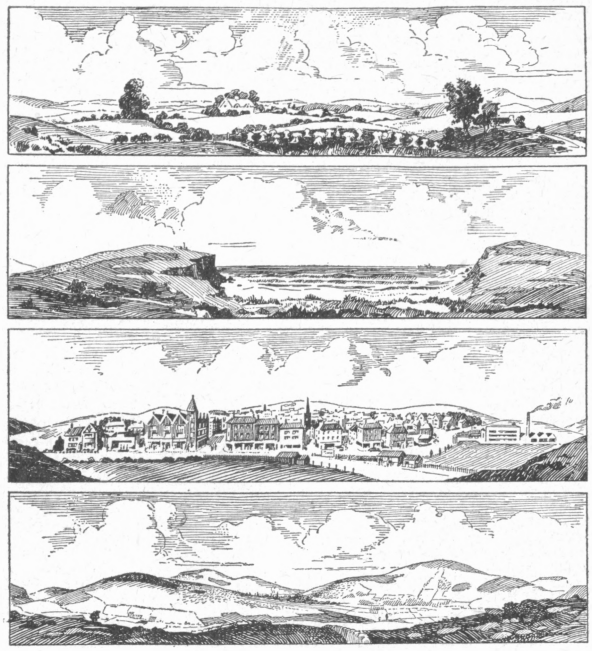

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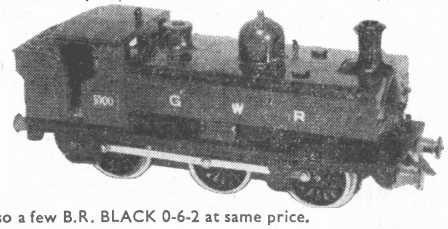

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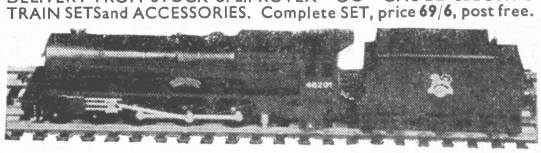

The 4-6-2 LOCOMOTIVE is fitted with the ZENITH X3 12 v. motor, set includes Loco and Tender, as illustrated, 2 Coaches, 14 pieces of track and battery control unit.

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The MODEL RAILWAY NEWS

Vol. 28 No. 331 July, 1952

Editorial Offices :
23, Great Queen Street, London, W.C.2.

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Notes of the Month

WE have received an interesting letter from Mr. H. R. MacKenzie, of Aberdeen, who, after stating that he thinks that Aberdeen must have been the last city in Britain without a model railway club, adds the very welcome news that a club to be known as " The Aberdeen Miniature Model Club " has been formed. Already, there are about twenty-five members, and their average age is very young—about 15½ years—but they are all very interested, though some have not previously done any " scale " model making. As they will be unable, for a year or two, to afford a permanent clubroom they propose to hold monthly meetings. Any other interested readers are invited to get into touch with Mr. MacKenzie at 19, Rubislaw Park Crescent, Aberdeen.

Mr. MacKenzie then goes on: " I should like at the same time to congratulate you on the standard of the M.R.N. (When a magazine is talked of in this way, I think it shows that it is affectionately regarded by its readers.) The quality of the drawings is very high and they are very much appreciated. I have only one plea to make—what about some Scottish ones ? "

We are duly grateful for this kind appreciation, and we promise not to forsake our Scottish readers; our pages should cater, as far as possible, for all tastes, and we have always borne this in mind. The point which particularly interests us, however, is the average age of the Aberdeen Miniature Model Club's members, and we value their appreciation all the more on account of its being under 16 years. We offer them all our most cordial good wishes for every success and prosperity; at the same time, we think they may be interested in being told by one of our most prominent advertisers that a young customer of his was recently in his shop, turning over the pages of the " M.R.N.," and having done so, he commented: " This is a very nice magazine, but there is not much in it for us."

This rather astonished us, because we know as well as most people that the youngster is always with us and must be encouraged and catered for; therefore, we believe that in every issue there is something to benefit the younger reader and pure novice. Mr. G. T. Driver's " Modelling Railway Rolling Stock in Cardboard " is an excellent instance; Mr. J. L. K. Mann's " Drilling Without Tears " is another; and those are but two of many that have graced our pages.

What of the future ? We have some good things to come; for example, a number of extremely useful articles dealing with the maintenance of model locomotives by Mr. R. C. Hawke, and several informative and instructive articles from Mr. M. G. Foster, whose own model railway figures largely in them—how it was built, how it is operated and how it is to be developed.

Let us hope, therefore, that each of our 20,000-odd paying readers will not fail to draw the attention of their younger friends to this news, as it is vital to them.

Useful Photographs

We are constantly receiving enquiries from readers who wish to know where photographs of locomotives, rolling-stock and other railway equipment can be obtained. We are always glad to see these enquiries, because they show that our oft-repeated advice on the importance of photographs as an aid to accurate model making is bearing fruit.

The two chief sources of railway photographs of most kinds are : The Locomotive Publishing Co. Ltd., 88, Horseferry Road, London, S.W.1 and Locomotive and General Railway Photographs, 9, Regent Place, Rugby, Warwickshire. Both these firms have many thousands of negatives covering almost every sort of railway subject.

The Rugby firm issues a very long list which, with numerous supplementaries, covers something like 25,000 separate photographs. We advise anyone searching for aids of this kind to get into touch with these two prolific sources.

Our Cover Picture

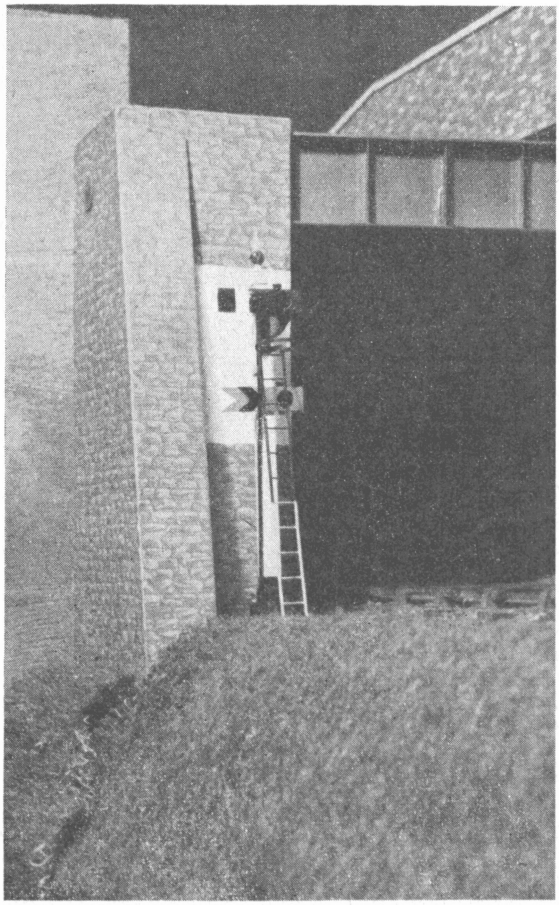
Dr. R. L. Robinson, of the Society of Model and Experimental Engineers, is the owner of the splendid 5-in. gauge model of the old L.B. & S.C.R. 0-4-2 type locomotive, *Gladstone*, seen on our cover this month. The photograph was taken at the Coulsdon Model Railway Club's Exhibition last year, when the engine, now about 16 years old, was at work on a track outside the hall. The photograph was taken by B. J. Tomlin.

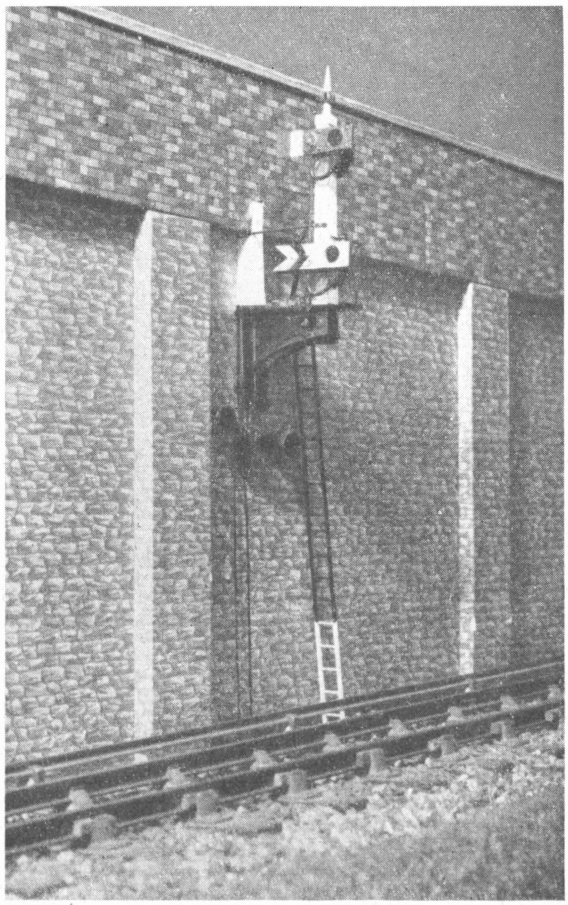
Two 7mm. Scale G.W.R. SIGNALS

by S. M. Hunter

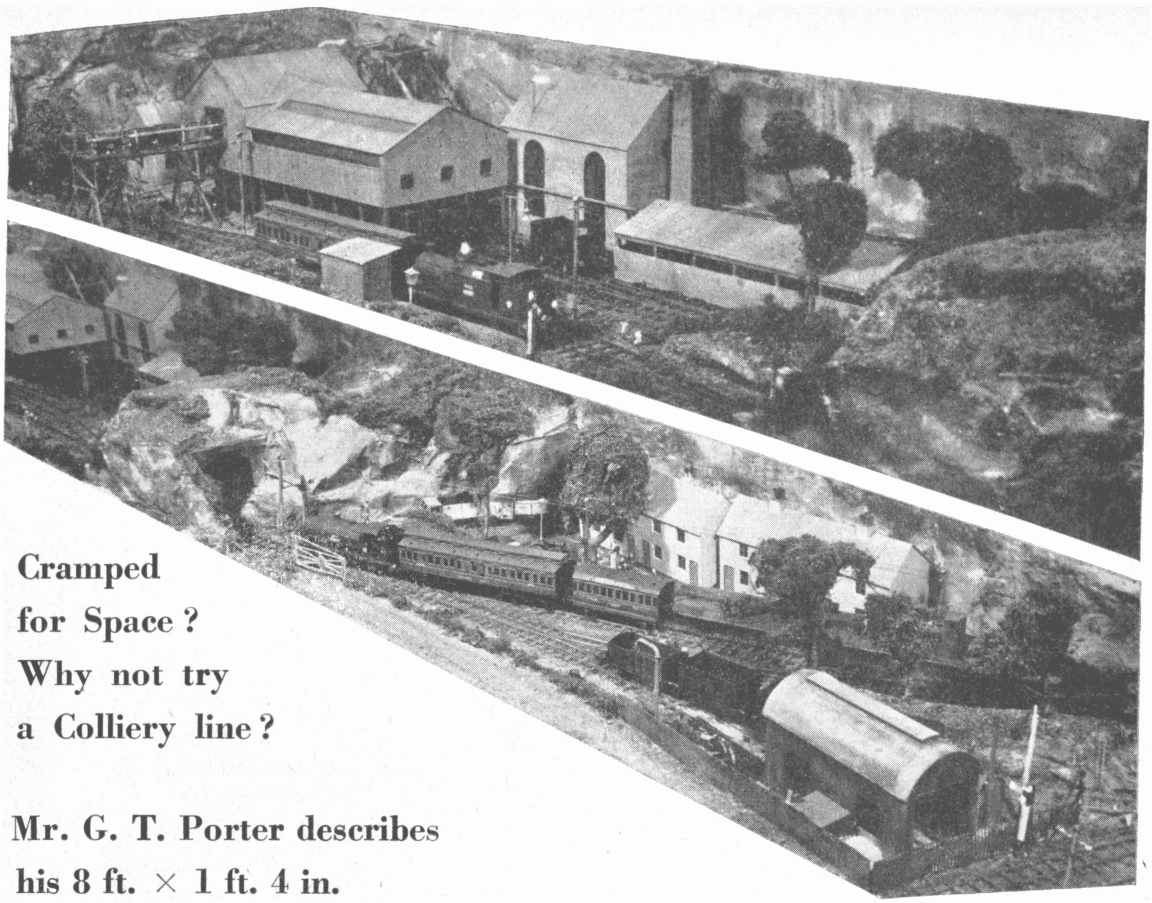
THE photographs reproduced here show two of the many signals I have recently built for my layout. Those shown have arms of the short, peculiarly G.W.R. pattern for use in confined spaces, although they are sometimes used right out in the open. No drawings were available so I made my own from a photograph and measurements of the Teignmouth up starting signal. In the two models shown, the distant arm for the tunnel is fixed, but that on the bracket signal is correctly slotted. The finial balls are hollow and have the correct six slots. Ladders are made from specially punched thin brass strip with pins as rungs.

The signal arms are worked by home-made electro-magnets fixed under the baseboard. Each magnet has 1,500 turns of 36 s.w.g. enamelled wire, wound in the lathe with a counter fixed to the back end of the mandrel. Current is supplied for all signals and points through a separate transformer and rectifier having a capacity of 12 amps at 14 volts. Each magnet takes 0.2 amps and as 20 signals may be down at a time the total current is 4 amps—equivalent to more than three trains running at once ! I have had some of the magnets switched on for over an hour without undue heating up.





Left: Fal Vale Docks outer home and fixed distant signals at foot of 1 *in* 30 *gradient*
Right: Fal Vale Docks up advanced starting signal and slotted distant arm, looking up 1 *in* 30 *gradient*



Cramped for Space? Why not try a Colliery line?

Mr. G. T. Porter describes his 8 ft. × 1 ft. 4 in.

POTWELL MINERAL LIGHT RAILWAY

Small but complete

THE problems confronting the designer of this 4 mm. scale model were (1) an available space only 8 ft. 0 in. long, 1 ft. 4 in. deep and 6 in. high, in which to plan a complete workable system, and (2) the restriction of the initial cost to the lowest possible figure.

The first of these problems was solved by obtaining, at the outset, two sheets of 1 : 2500 Ordnance Survey maps of the East Kent Light Railway between Shepherdswell and Tilmanstone Colliery and modifying the general track layout to fit. The second problem was met by obtaining, very cheaply, second-hand brass track on brass sleepers, the intention being to electrify with stud contact at some future date. For the present, motive power consists of "Riemsdyk" controlled clockwork locomotives in a very much rebuilt form. The rolling stock price was kept down by purchasing only the underframes and wheels; these, together with some 1 in. × 1 in. battening and two sheets of hardboard, were the only items bought at the outset.

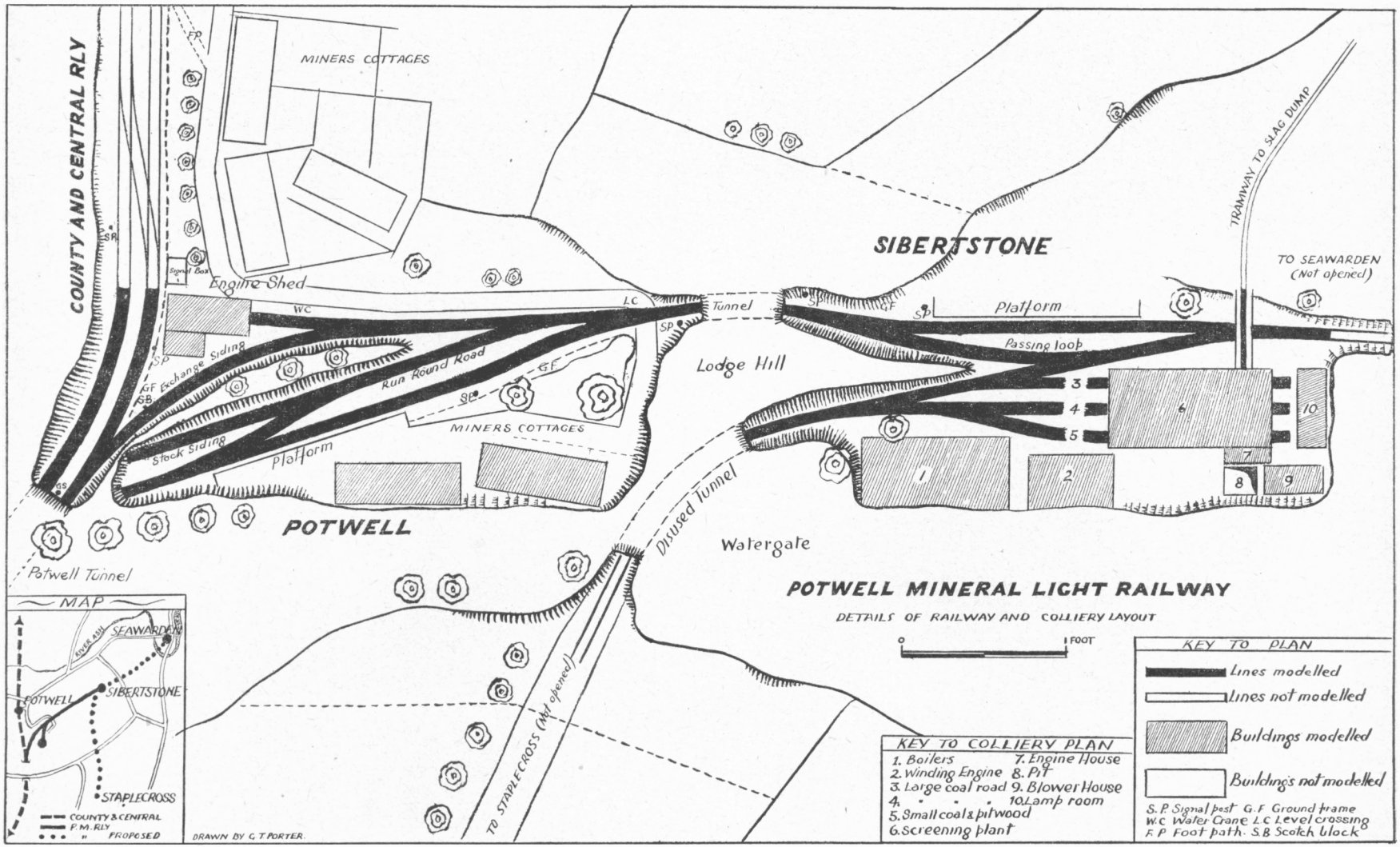
Like so many light railways, the Potwell Mineral Light Railway visualised itself as a much larger system than exists today.

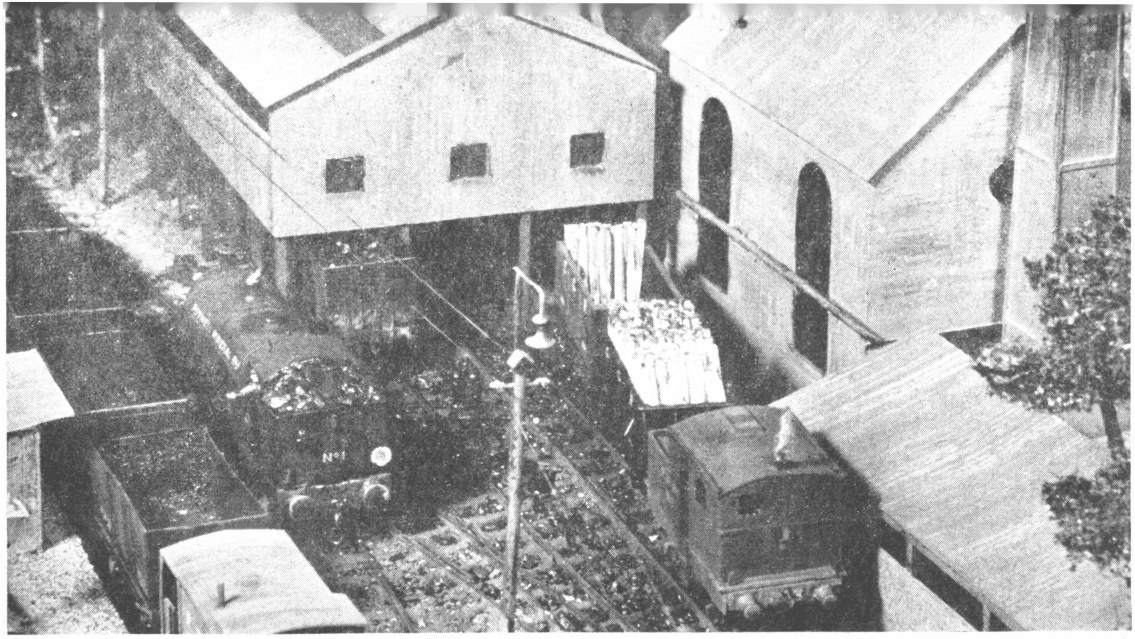
It was authorised, by a Light Railway Order, to construct a series of lines connecting up collieries in the Ash Valley coalfield, making a junction with the County and Central Railway at Potwell and running via Sibertstone Colliery to a new port for the shipment of coal at Seawarden, with a short branch from Sibertstone to Staplecross Colliery. In actual fact, only the main line from Potwell to Sibertstone—a distance of just over a mile—and the first ¼-mile or so of the Staplecross branch were ever constructed.

There was at one time a passenger service of two or three trains daily, but now only colliers' trains are run, there being single platform halts with small wooden shelters at Potwell and Sibertstone.

The Railway as it is Today

An exchange siding makes a trailing connection with the County and Central main line just south of Potwell tunnel, and rounds a sharp curve in a shallow cutting to be joined by a short spur from the engine shed, connection then being made with the run-round road and the main platform road. The main line turnouts, starter and home signals are


COUNTY AND CENTRAL RLY
MINERS COTTAGES
SIBERTSTONE
TRAMWAY TO SLAG DUMP
TO SEAWARDEN (Not opened)
Engine Shed
WC
L.C
Tunnel
Platform
Passing loop
Exchange Siding
Run Round Road
Lodge Hill
Stock Siding
Platform
MINERS COTTAGES
POTWELL
Disused Tunnel
Watergate
Potwell Tunnel
TO STAPLECROSS (Not opened)
MAP
SEAWARDEN
POTWELL
SIBERTSTONE
STAPLECROSS
COUNTY & CENTRAL P.M. RLY
" PROPOSED
DRAWN BY G.T PORTER.
POTWELL MINERAL LIGHT RAILWAY
DETAILS OF RAILWAY AND COLLIERY LAYOUT
FOOT
KEY TO COLLIERY PLAN
1. Boilers
2. Winding Engine
3. Large coal road
4. " "
5. Small coal & pitwood
6. Screening plant
7. Engine House
8. Pit
9. Blower House
10. Lamp room
KEY TO PLAN
Lines modelled
Lines not modelled
Buildings modelled
Buildings not modelled
S.P Signal post G.F Ground frame
W.C Water Crane L.C Level crossing
F.P Foot path. S.B Scotch block



No. 1 *running round at Sibertstone with No.* 3 *shunting pit-wood wagons*

controlled by a four-lever ground frame.

There is another short siding at the end of the run-round loop which is used for the storage of coaching stock and a travelling crane. The run-round loop will permit a locomotive to run round four four-wheeled wagons (the brake van being detached at the entrance to the loop and run round after shunting is completed), or one bogie coach and one four-wheeled coach. The two sidings have a capacity of ten four-wheeled wagons.

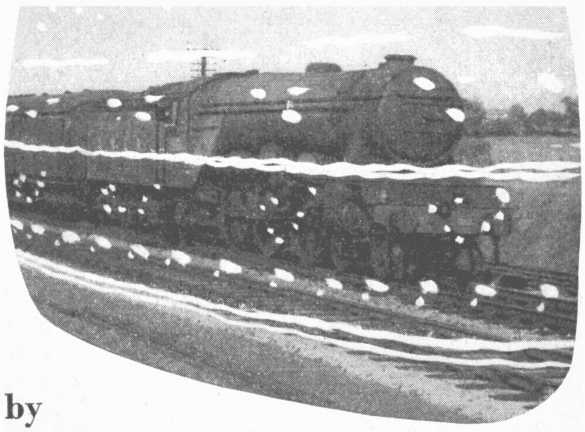
The line then runs over a road with a gated level crossing, and thence through Lodge Hill tunnel—the only engineering work of any note on the line. This is followed by a short rock cutting to Sibertstone Colliery Halt, the Staplecross branch coming in on the east side. A passing loop used as a run round will take four four-wheeled wagons and a four-wheeled brake van. A section of the Staplecross branch as far as the boarded-up entrance to Watergate tunnel is used as a shunting neck to the colliery sidings, which are three in number with a capacity of sixteen four-wheeled wagons. The signals and main running turnouts are controlled by a four-lever ground frame. Train staff and tickets are used between Potwell and Sibertstone, there being telephone boxes at the foot of a telephone pole at Sibertstone and on the platform at Potwell.

Traffic on the light railway is handled by three iocomotives, two coaches, ten four-wheel open wagons, one travelling crane, one match truck and one brake van. Colliers' trains usually consist of one coach and perhaps a wagon of pit wood (the latter is conveyed in County and Central wagons) or other colliery supplies. The locomotives run round the trains at each end of the line, there being one up and one down colliers' train at the end of each eight-hour shift. Full coal wagons are shunted from under the screening plant out on to

(*Continued on page* 139)

At Potwell station, 0-6-2*ST No.* 1 *is shunting on the exchange siding. C. & C. Rly. coaches Nos.* 1 *&* 2 *are at the platform*

Model Railways and INTERFERENCE SUPPRESSION



by
A. Farnworth

INTERFERENCE to radio and television reception caused by model railways is bound to produce adverse criticism against those of us who "play with trains." Unless tactfully handled I know that this kind of thing can lead to extreme unpleasantness; let us, therefore, consider the mechanism of radio interference and the means of reducing and eliminating it.

At the outset it should be clearly understood that no two cases of interference are alike and that only by experiment can the various methods be proved effective or otherwise. Certain general remedies are available and these are the ones to be discussed.

There is a considerable difference in wavelength between the ordinary radio broadcast band and the television band, this necessitates the use of different component values for the two bands although the electrical circuit details are similar. When considering earthing of components a much more efficient earth is required for T.V. suppression than for radio. High resistance earth leads are unsatisfactory in both cases. Due to wavelength and other differences a given source of interference may have a greater effect on T.V. signals than radio signals or vice versa.

As far as model railways are concerned interference is created whenever a spark occurs. An electric spark is in effect a small radio transmitter broadcasting on a whole range of wavelengths; therefore it is virtually untunable, although it may radiate more strongly on one particular group of wavelengths. The spread of the interference generated by a spark may be either by direct radiation in the same way as a radio transmitter,

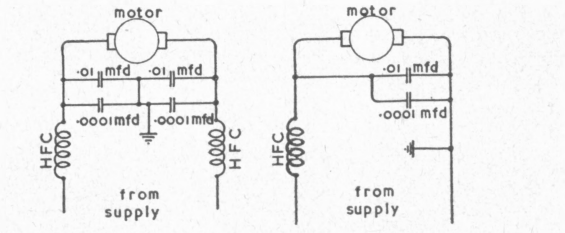


FIG 1

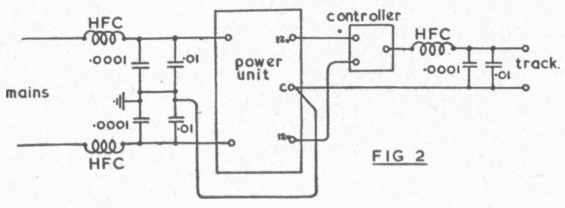


FIG 2

or alternatively it may be "mains borne" i.e., carried by the supply mains. Again it may be picked up by telephone or similar wiring and thus carried for considerable distances. The interference carried by the supply mains or other wiring thus affects a greater area than when radiation is direct. Sparks are caused whenever an electric circuit is broken and circuits containing coils of wire, particularly with iron cores, cause larger sparks due to induction.

Thus, if we eliminate all sparking, radio interference will cease but, of course, this is impossible in the case of a model railway. Sparking occurs most severely at commutators and collector contacts. The odd sparks caused by switches can usually be tolerated.

Since we cannot prevent the sparks, although they can be reduced to a minimum by scrupulous cleanliness of commutators and track, we must devise means of suppressing the generated radio wavelengths. This consists of by-passing these high frequency alternating currents to earth *at their source*, or offering resistance to the build up of such currents by inserting "chokes" in series with the offending apparatus. When used alone the former method is generally the more effective and consists of condensers suitably connected in the circuit. For radio broadcast frequencies the size of condenser needed is about 0.01 microfarad and in general chokes will not be needed. For television wavelengths 0.0001 microfarad condensers will be required and suitable chokes can be made by forming a few inches of the connecting wire into a spiral. About 6 turns spaced evenly over $\frac{3}{4}$ in. wound on a $\frac{1}{4}$ in. diameter former will usually suffice. Such a choke can be self-supporting and takes up little room compared with a radio wavelength choke which would need about 200 or so turns on a half-inch diameter tubular former. It is important when making chokes to ensure that the wire used will carry the current required by the equipment to be suppressed.

The point of connection of suppression devices should be as close as possible to the source of interference, particularly in cases where direct

radiation is to be prevented. This means that some equipment must be fitted on each locomotive and it is here that considerable ingenuity will be needed in some cases.

Fig. 1 shows the connections for condensers and high frequency chokes at *A* for an unearthed supply and *B* for an earthed supply. Method *A* will not be applicable to traction motors since an additional rail would be needed for the earth connection.

The recommended point of connection for the earth is to the common terminal of a split potential unit or the negative terminal of a single unit.

The perfect suppression of the interference from rail collector sparking for T.V. receivers is almost impossible. The use of chokes, condensers and an internally screened transformer will reduce the extent of the interference.

A filter for reducing the effect of rail sparking is shown in Fig. 2, together with the complete mains input filter. The latter will probably have little or no effect when the suppressors have been connected on the low voltage side but may be used alone where it is desired to check " mains borne " interference. Note that the condensers here must be capable of carrying the full mains voltage and be suitably connected in a shrouded box. This type is probably better purchased as a complete ready made unit. All chokes shown in Figs. 1 & 2 are intended to be for television suppression. If radio suppression only is desired omit these and the 0.0001mfd. condensers.

The foregoing methods have been tried in one instance and resulted in reducing the area effected. The layout still interfered with the T.V. receiver in the adjacent house, however, and finally attempts at further improvement had to be abandoned. One last, but expensive, method could have been tried and that would be to enclose completely the whole layout in an earthed screen made of close mesh netting. This was the method used for prevention of interference from certain types of medical equipment and when properly carried out is fully effective. The screen must be continuous above, below and around the layout with continuity switches on doors etc., and all wires leading in to the layout must be fully protected as detailed earlier. It would probably be easier and cheaper to run the layout in non-T.V. hours !

" *You've got just four and a half minutes to run that express parcels before the second act begins* "

One last word, before attempting suppression ensure that it is the layout which is causing the interference. This is best done by synchronising watches and then doing a one-minute-on, half minute-off routine, for about five minutes, with one person on the layout and one at the receiver affected. Having thus located the interference try first the earth and then the various condenser and choke arrangements until satisfactory results are obtained.

For readers who really get into trouble I should like to draw attention to the fact that the Post Office Engineering Department provide a free radio investigation service. Skilled engineers with ample experience of interference difficulties are therefore available to all.

THE POTWELL MINERAL LIGHT RAILWAY

(*Continued from page* 137)

the main line by locomotive No. 3—a Sentinel 0-4-0 which returns to Potwell shed only at week-ends. (With empty wagons the procedure is reversed.)

The other two locomotives are No. 1, *Joan*, a 0-6-2 saddle tank, and No. 2, *Diane*, a 0-6-2 side tank. Usually only one of these two engines is required in steam at one time.

The coaching stock at the moment comprises No. 1, a four-compartment four-wheeler, and No. 2, an eight-wheel bogie brake, both made up of card sides and ends by Hanson, of Newcastle-on-Tyne.

The locomotives, with the exception of No. 3, which is green, are black with yellow lettering and red coupling rods. The coaching stock is grey with white lettering ; the travelling crane is painted red oxide and the brake van grey, all other wagons being a very much weathered black.

It will be seen that even in the very small space that has been given to this model, a complete individual railway can be built, the working details of which are never without interest.

In the second part of the article, brief details will be given of the construction of the model and the cabinet in which it is housed, together with some notes on the scenic work involved.

The photographs are by Mr. H. Tipper.

British Railways Standard Wagons

13-ton Medium Goods Wagon and 13-ton Low Goods Wagon

TWO further types of British Railways standard wagons recently produced are the 13-ton medium goods wagon and the 13-ton low goods wagon, which have been designed at Derby to the requirements of Mr. R. A. Riddles and are being built at Ashford and Shildon respectively.

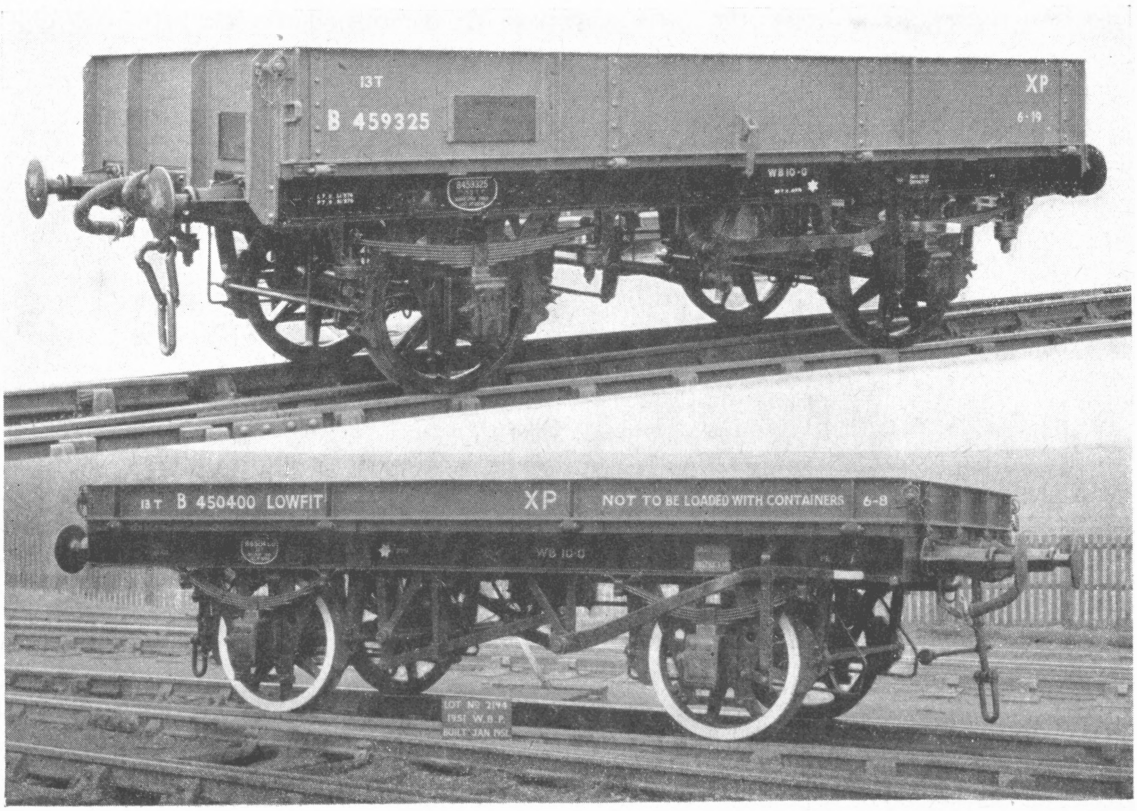
The 13-ton medium goods wagon is shown on one of the opposite diagrams, giving the general layout. The wagon is mainly of riveted construction, the underframe and body members being of B.S. rolled steel sections. The body is of all-metal construction with the exception of the floor which is of timber. The ends are fixed and the sides comprise one-piece hinged doors which are fitted with spring door controllers.

The other diagram shows the general layout of the 13-ton low goods wagon. The underframe is of all-welded construction and the body is of metal with the exception of the timber floor. The sides and ends are fitted with one-piece hinged doors made up of 9 in. × 3 in. channel. The sides, when lowered on to a loading deck, present a practically flush floor, while the ends, when dropped, form loading ramps over the buffers.

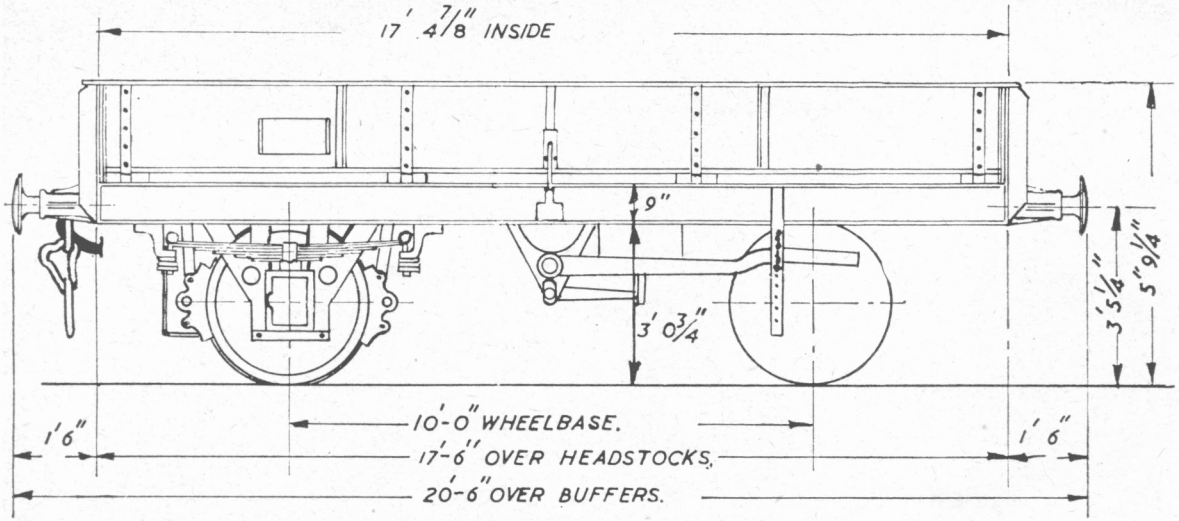
The buffing and drawgear of both vehicles are similar. The spindle type buffers with 1 ft. 6 in. projection are fitted with rubber or steel coil springs behind the headstocks, and the short drawgear is used in conjunction with either all-rubber or rubber and steel springs. Instanter or screw-couplings are fitted, allowing either long or short connections.

The wagons are fitted with vacuum brakes for fast freight working and hand brakes which can be worked from either side of the wagon. Clasp brakes are used with eight blocks per wagon.

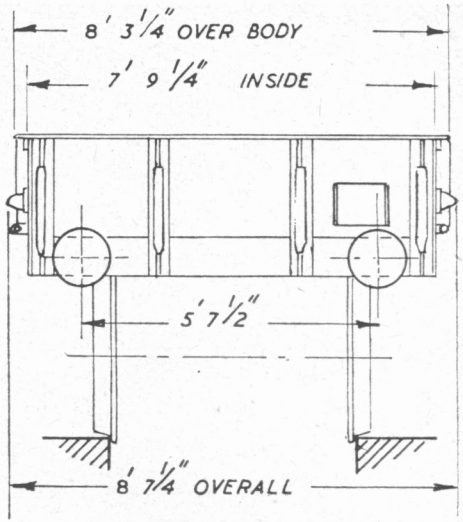
Standard laminated bearing springs are fitted which in the case of the 13-ton medium wagon are 4 ft. 6 in. long and have indiarubber auxiliary springs, whereas the 13-ton low wagon has 3 ft. 6 in. long springs with the normal type of spring shoe.



13 TON MEDIUM GOODS WAGON

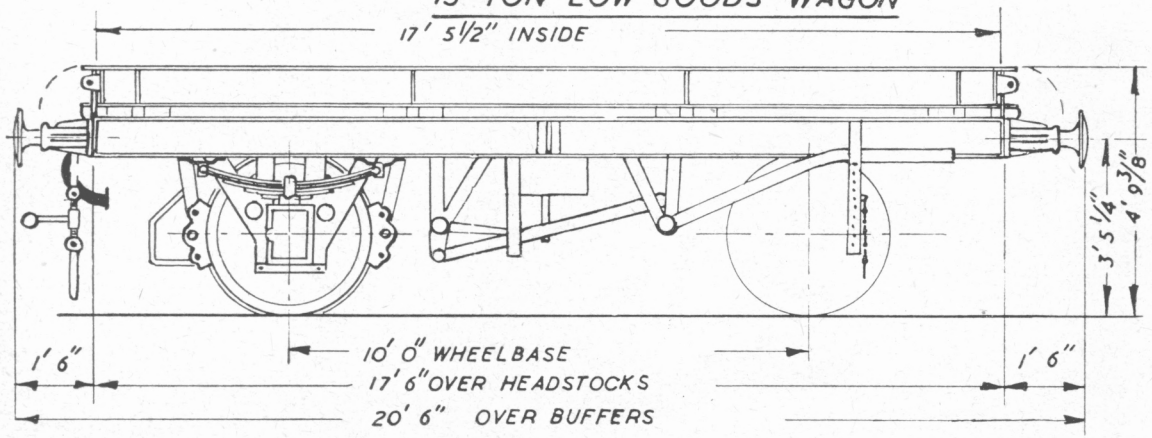


TARE:- 7 TONS. - 1 CWT. DROP SIDES.
MIN. CURVE. 1 CHAIN. A.V.B. AND HAND BRAKE.



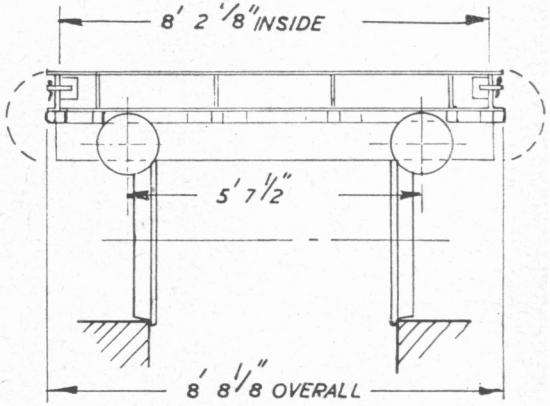
WHEELS 3' 1 1/2" DIA.
BUFFERS 1' 1" DIA.

13 TON LOW GOODS WAGON

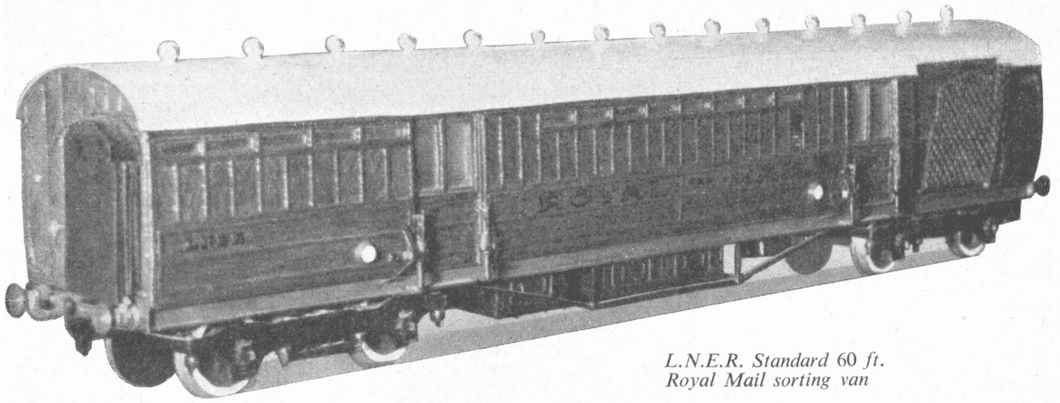


TARE : 6 TONS.- 9 CWT. DROP SIDES AND ENDS.
MIN. CURVE. 1 CHAIN. A.V.B. AND HAND BRAKE.

SCALE. 0 1 2 3 4 5 6



WHEELS 3' 1 1/2" DIA.
BUFFERS 1' 1" DIA.



L.N.E.R. Standard 60 ft. Royal Mail sorting van

Modelling Railway Rolling Stock in Cardboard (2)

FOLLOWING THE METHODS DESCRIBED IN THE JUNE ISSUE FOR THE MODELLING OF FREIGHT VEHICLES, THIS MONTH THE AUTHOR DESCRIBES HOW HE BUILT THE COACHING STOCK ILLUSTRATED AND INCLUDES A SECTION ON L.N.E.R. TEAK FINISH AND TRANSFER FIXING

by G. T. Driver, B.Sc. M.M.R.S. and M.R.C.

THE procedure of laminated construction already described is followed in the construction of coaching stock with the important modification that the lower part of the side has to be bowed. Hence the use of some sort of former is necessary. Mine consists of a piece of oak about 2 ft. × 3 in. × ¾ in. rounded off to the correct radius, and then treated with linseed oil.

Since the great majority of the older types of coach have round cornered panels, I find that the best way to simulate the beading is to cut it out, from thin card, in the form of a mask. For square cornered panelling, the building up of the beading strip appears to be the simplest method and this was used in the construction of the L.N.E.R. Royal Mail Van illustrated. So far as I am aware, the late L.N.E.R. was the only post-grouping company which used this type of panelling though it was used by various pre-grouping companies.

(i) The first step is to decide the number of layers which is required per side of the coach concerned. This depends largely upon the question as to whether or not the coach in question has recessed doors and the depth to which they are recessed. For example the N.E. 1st-3rd Compo illustrated has five layers of the 0.012 in. card per side whereas the Tyneside electric motor coach has nine layers of mixed 0.012 in. and 0.025 in. manilla card.

(ii) Draw out the whole of the sides, showing all windows, outer edges of drop lights and all panelling on the one piece of card and mark the corners which are to be rounded. Treat this card on both sides with two coats of shellac and put aside to harden off.

(iii) Draw out the outline of both sides on another piece of card and treat the face of this with shellac as before.

(iv) Draw out both sides on a further piece of card, with apertures drawn in about 2 mm. larger all round than the combined quarter lights and drop light in each compartment. This forms a rebate into which is fitted the "glazing" for the windows.

(v) Draw out further layers (as required) showing the quarter lights and inner edges of the drop light frames. These layers serve to hold the "glazing" in position.

(vi) With the first layer go round the corners of every panel and the outside edges of the drop light frames with the leather punch, leaving the quarter lights alone for the time being. Join up the resulting holes with razor blade and straight edge, thus producing a "mask," which is carefully rubbed down, on the reverse side to remove the ridges left after punching and on the face to remove any roughness, with fine sandpaper. The corners of the panels and drop light frames are then trued up with a small round file and the edges with flourpaper to correct any uneveness and, after trimming the lower edge (i.e., the waist line) both sides of the mask are given a coat of primer. The face of the second layer is similarly rubbed down and given a coat of primer as before.

The purpose of the shellac treatment of the mask is two-fold, inasmuch as the shellac stiffens it considerably and also prevents any distortion when gluing. The painting is necessary because, as already explained, Croid or similar glue will not adhere satisfactorily to plain shellacked surfaces.

(vii) When the priming coat of paint is dry, the mask is carefully glued on to the second layer. In this connection, it will be found advantageous to cut and affix the mask in sections by dividing down the door lines as, especially in the case of a fairly long coach it may be found that the glue applied to one end of the mask may be dry before the other end has been reached By dividing into sections, the doors will be separate and the largest section to be affixed will be that between adjacent doors.

We now have the mask glued to the second layer and the drop lights (inside of frames). Compartment and/or corridor windows can now be punched and cut out as before—treat the edges of these cut out windows with shellac, undercoat and final colour and after allowing to dry, we have the exterior of the sides completed.

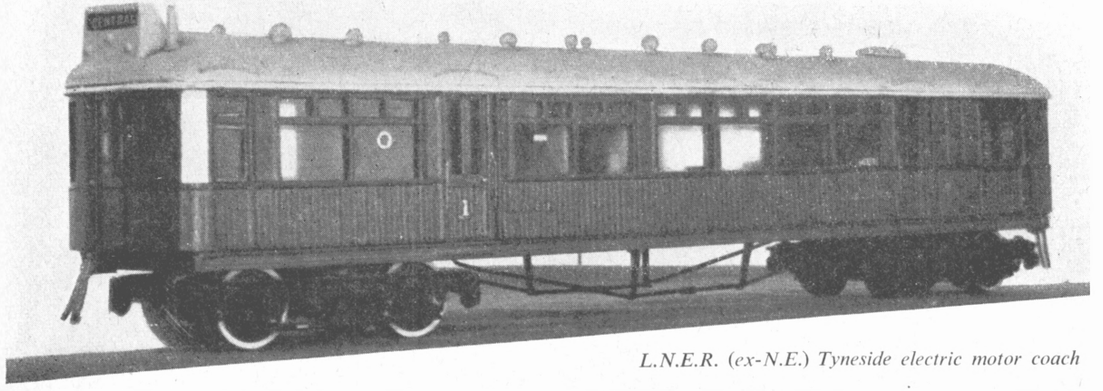
(viii) The ends are best built up by drawing out the beading, narrower than the overall width of the coach by four thicknesses of the card in use, treating with shellac, and cutting out except for the outer edges of the beading, and painting. This mask is glued to a second layer, the face of which has been treated with shellac, rubbed down and painted. These two layers may then be glued to further layers and the outer edges cut. Normally four layers are sufficient for the ends but, where windows are required in the ends (as in N.E. milk vans and suburban brake-thirds) five may be required and where this is the case the building up of the ends follows exactly similarly to the sides except that all layers are of uniform width. I usually leave the curves of the lower part of the ends until the sides are completed before cutting and sanding to fit.

(ix) The ends are mated to the half completed sides as already described for freight stock and the third layer (in which the enlarged apertures have been cut) and subsequent layers are cut to fit between the ends. The third layer is then carefully glued to the back of the half completed side and, after scoring the door lines from the waist down (with the back of a dessert knife), the three layers are placed on the wooden former, bound round with the 2 in. surgical bandage and allowed to dry. The glazing material is then inserted in the rebates and the fourth and subsequent layers carefully glued into position after which the side is replaced on the wooden former bound round with the bandage and allowed to dry out.

(x) The sides and ends may now be assembled, after trimming the curve of the lower part of the ends to fit snugly into the turn-under of the sides, in the same way as already described for freight vehicles. The floor can now be cut and fitted (this will have to be chamfered on the outer edges to conform with the turn under of the sides) from the top of the body.

Both from the point of view of appearance and that of strength, it is advisable to fit intermediate partitions between each compartment and these are best cut from $\frac{1}{16}$ in. hardwood to the same shape as the ends except that the width is less by four thicknesses of the card in use and the height less by the thickness of the floor. If it is decided to use $\frac{1}{8}$ in. × $\frac{1}{8}$ in. roof supports these partitions will require to have $\frac{1}{8}$ in. × $\frac{1}{8}$ in. notches cut in them, in the appropriate positions, to receive such supports. These intermediate compartment partitions are now smeared with glue on the outer and lower edges and fitted into their appropriate positions, and after the glue has been allowed to dry hard the whole of the inside of the body is given two coats of thin shellac and allowed to harden off.

N.B. At this point consideration must be given as to whether or not the coach is to be internally fitted with seats and other details, for once assembly



L.N.E.R. (ex-N.E.) Tyneside electric motor coach

Continued from page 122, THE MODEL RAILWAY NEWS, *June*, 1952.

has passed this stage it will not be possible to fit internal details.

(xi) The roof supports are now fitted in their appropriate positions and secured both to the ends and in the notches in the compartment partitions by means of nitro cellulose cement, any roughness removed with fine sandpaper and the supports are sanded on the upper surfaces so as to give a smooth curve. If this is not done the roof, when fitted, will show ridges, thus spoiling the effect.

(xii) *Roof*

(*a*) *Segmental*

The method of producing the type of roof given for freight vehicles is only applicable in cases where the roof has a more or less true radius (as, for example, in the old N.E.R. so-called flat roofed suburban stock).

Where a segmental roof, with sharp radii at the eaves, is required, it will be found preferable to cut one layer of card to size, fit this first to one of the roof supports along the eaves, over the tops of the other roof supports and finally to the support along the other eave, clamping it down with the ever useful bandage, using a shellacked piece of stripwood along each eave to prevent it springing out at those points. A second layer can then be cut and fitted in a similar manner.

Another method, for which I am indebted to Mr. R. D. Pochin, of the Manchester Model Railway Society, is to cut the second and third layers of the sides sufficiently wide so as to meet on the centre line of the vehicle, the join, when glued and sanded, being invisible. A further method is to make a wooden former for the job but this is rather out of the question as a number of different types of former will be required if it is intended to model various vehicles and it is not everyone who can make an accurate former of the length required. The junction of roof and body is hidden by the fitting of a narrow strip of card (about 1 mm. wide) to simulate guttering and the whole roof and guttering given two coats of thin shellac, followed, when thoroughly dry, by rubbing down and the application of a coat of undercoating paint.

(*b*) *Clerestory*

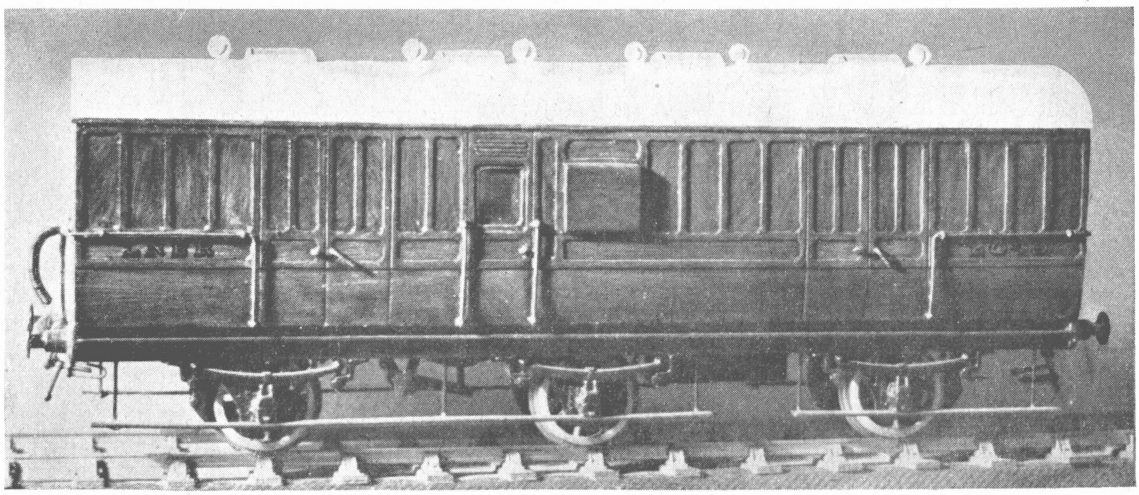
This type of roof is perhaps a rather easier type to model than the segmental and similar methods can be used. The roof supports will require to be carefully placed, i.e., one along each eave, one along each side of the base of the clerestory with a further one between these two. For the top of the clerestory, supports will be required along each edge with a further one in the centre. The card roof (two layers) can then be affixed in three pieces after the fitting of the clerestory sides—made up of two layers of card with a strip of Perspex or cellulose acetate sandwiched between and held together by judicious application of acetone.

After constructing some coaches by this method in 1938, the idea of using planed and sanded strip for the top and wings of the clerestory was tried and found easier and equally satisfactory. As before, the card roof is given two coats of thin shellac, particularly the overhanging edges, rubbed down, ventilators, roof handrails, lamp tops, etc., fitted and given a coat of undercoating.

(*c*) *Domed Ended Roof*

This type of roof cannot be reproduced in card and the only method appears to be to construct it from solid wood, hollowed out underneath if considered necessary. This type of roof was that used in the Tyneside electric motor coach illustrated.

(xiii) The body of the coach is then completed by the addition of the necessary end steps and handrails, door handles (filed up from flattened pin heads) commode handles (staples from stapling machines cut to size and inserted in holes drilled in the sides with a fine sewing needle of suitable size). Any glue which may have spread from under the beading is carefully sponged away with a dampened tuft of cotton wool and the whole body given a further



L.N.E.R. (ex-N.E.) 32 ft. 6-wheel milk van

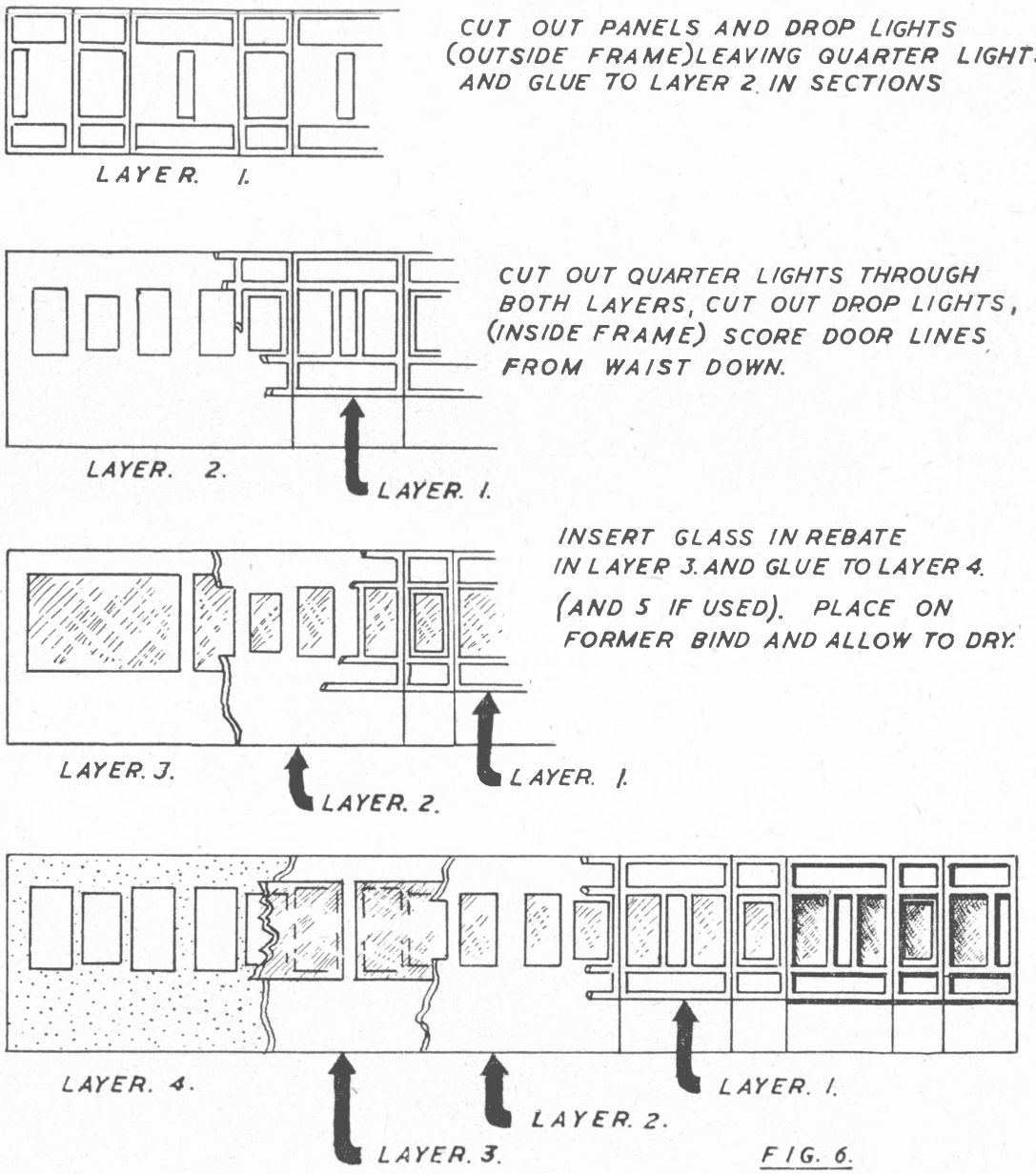


FIG. 6.

coat of undercoat—this helps to seal the glued surfaces of the beading. Final painting and lettering may now be carried out according to the builders wishes and in this connection, for the particular interest of followers of the late L.N.E.R., the following method of reproducing the varnished teak finish of that company may be of interest.

L.N.E.R. Finish

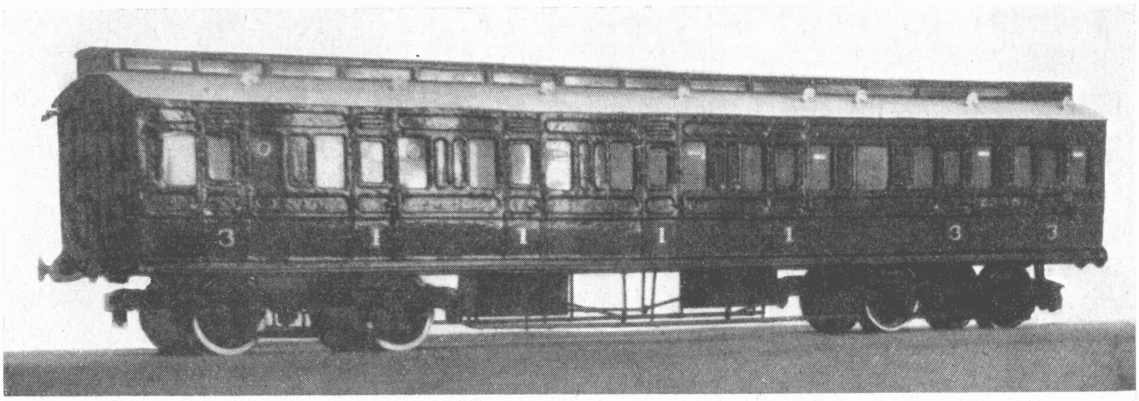
(a) Give the body two coats of Matsine undercoating M.U.2 (if this has been used for undercoating during construction this stage will be omitted).

(b) After allowing to dry hard, gently rub down with fine flour paper and clean thoroughly from all dust.

(c) "Grain" each individual panel, using a child's cheap paint brush, cut down so as to give short stiffish bristles, with a mixture of Matsine teak and light oak stains thinned with pure turpentine. This mixture will have to be made up to suit individual tastes but I find that the proportion of three parts teak to two of light oak diluted to about five times its own volume with pure turpentine gives about the right effect. The actual graining may need some

little practice but will then be found to be fairly easy—the main aim should be to obtain a " cloudy " effect and to avoid making the grain lines too obtrusive (if the teak stain itself is used the grain becomes much too dark and obtrusive).

When the " graining " is completed and dry, the best and easiest I know and can be used for all sorts of purposes—fixing " smoking " labels on windows, windows in station buildings, etc., but it does not seem to be at all well known. There are however, one or two points to watch—acetone plays havoc with paint and varnish and is inflammable.



L.N.E.R. (ex N.E.) 1st-3rd composite clerestory suburban coach

transfer lettering and numbering can be affixed, after which the sides and ends are varnished with thin copal varnish in which has been dissolved sufficient orange dye (dye oil orange) to yield a reddish hue approximating to that of engine oil of the Mobiloil or Essolube type.

The resultant finish will be found to be a very close approximation to the prototype finish but

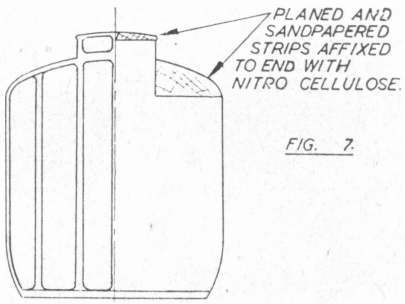


FIG. 7.

care should be taken to avoid a uniform colour for the shades found in full size practice are legion.

Simulation of Toilet Compartment Windows

These can be easily and quickly produced by cutting a piece of tissue or cigarette paper to the size required, laying it in position on the *inside* of the " glass " (if of cellulose acetate) and carefully dampening it with acetone applied with a camel hair brush. The acetone fixes the paper securely to the celluloid and after allowing the acetone to evaporate the paper can be given a coat of clear varnish to make it translucent (for L.M.S. coaches) or of white paint (for L.N.E.R. corridor coaches).

This method of cementing paper to celluloid is the best way to avoid the former is to be sure to use a small brush for the job and to avoid drops. The precautions against the latter are obvious—no smoking nor naked lights.

Cleaning of paint brushes

The finest medium for cleaning brushes (provided the bristles are not set in rubber) is trichlorethylene and brushes so cleaned can be used for all colours indiscriminately. It must, however, not be used in a confined space and do not smoke whilst using it. It is not inflammable but is a anaesthetic to some degree and decomposes into phosgene when drawn through a lighted cigarette or pipe.

For cleaning brushes used for shellac, there is nothing better than methylated spirit (industrial if possible) and acetone comes a close second.

Fixing transfers

The usually accepted method is to coat the back of the transfer with gold size, leave until tacky and then place in the required position. This method has the great disadvantage that, once the transfer has been placed on the vehicle it cannot be adjusted and, if it happens to be crooked or slightly out of position, it has to remain so.

In place of gold size or transfer varnish, I use a smear of Croid glue on the back of the transfer and apply in the usual way and, as the glue takes a short while to become tacky it is possible to carry out any slight adjustments necessary. When correctly placed, it is pressed down firmly with the little finger and allowed to dry out for an hour or so in a warm atmosphere. The backing paper is then soaked with water and carefully removed, the surplus water being soaked up with a piece of filter paper, keeping well clear of the actual letters or

(*Continued on page* 151)

RAILWAY TOPICS

by J. N. Maskelyne, A.I.Loco.E.

Stroudley's Locomotive Livery

SOME time back, I was involved in some discussion on the subject of the famous " Stroudley's Improved Engine Green " for passenger engines and also whether the main frames of the L.B.S.C.R. engines of that time were maroon or black. There were other minor details of painting under review, and I published much of the information in my " Topics " for September, 1948. It seems that my remarks were not fully convincing, because I find that there are still a few people whose opinions on the matter are, shall I say, wavering.

Just lately, however, I have been privileged to inspect a remarkable " find " which has been acquired by the British Transport Commission's Museum Committee. This is a beautiful $\frac{3}{4}$-in. scale model of one of Stroudley's 0-4-2 mixed-traffic engines, No. 312, *Albion*, and Mr. J. H. Scholes has very kindly allowed me to examine it closely. At the moment, nothing is known of its history except that it has been presented to the commission by a Brighton widow.

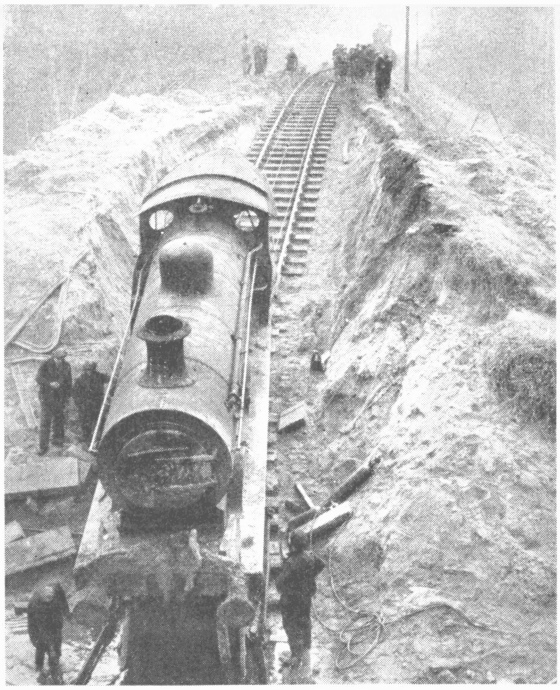
But I find this model extremely interesting; it is a lovely little job, obviously old but built by an enthusiast who knew Stroudley's engines. Every detail is correct and to scale, while the painting is really masterly. The first thing I noticed was that the main colour is a *really deep*, rich and slightly greenish orange, totally unlike the bright yellows we so frequently see on models; even my own *Plumpton*, in which I tried hard to reproduce that wonderful colour, is somewhat on the light side when compared with this new find.

The next thing I noticed was that the main frames and the tyres of the wheels are *black* ! So there would seem to be no room for further doubt on this point.

The only fault that I can find on this most interesting model is the crimson shade that has been used for the top of the tender tank and the coal-well; I think this ought to be a dark red oxide.

A Rescue

I am indebted to Mr. Charles White, of Midhurst for the interesting photograph reproduced herewith. The scene is on the single-line branch of the Southern Region from Chichester to Midhurst, and the unfortunate engine, S.R. No. 32540, of Class " C2X," had met with a most uncommon mishap. During the very heavy rains last November, a culvert near Midhurst was washed out, together with a good deal of the embankment on each side of it. No. 32540, hauling a goods train, was approaching the spot, when her crew, who had already been warned by a ganger to keep a sharp look-out because of flooding along the line, were horrified to see ahead of them



a 20-ft. gap spanned only by rails and sleepers ! So they jumped clear and could do nothing but watch their engine plunge nose downwards into the hole, taking the track with her. The ground, as may well be imagined, was very soggy, and the engine gradually settled down into the mud; but her tender remained in an almost vertical position, bearing hard up against the cab. The coal on the tender was piled on to the footplate, some of it being forced through the firehole door, where it was set alight by the fire already in the firebox, and smouldered for some days.

Meanwhile, the problem was: here was a 45-ton locomotive embedded in slush and mud some 15 ft. below track level; how was she to be got out ? Due to the state of the ground, the embankment and the track, no crane could be brought near enough to reach her, so some other scheme had to be evolved. The photograph shows it in action. Another engine was brought up from the Chichester end of the branch, bringing equipment which included a considerable quantity of stout wire rope. This second engine approached as near as she dared without getting into trouble herself, and then, very briefly, three lengths of wire rope were securely attached to No. 32540 and to the second engine. The lengths were adjusted until all three were in tension, and, when all was ready, the signal was given, the second engine was reversed and slowly pulled No. 32540 out of the mud-bath ; by the use of skids, her wheels were directed back on to the rails and she was hauled up on to level and stable track, once more. Needless to say, the train which No. 32540 had been taking to Midhurst was removed, wagon by wagon, and returned to Chichester before " Operation Rescue " could be attempted.

I am glad to be able to add that, on examination, No. 32540 was found to be comparatively slightly damaged; she was taken to Brighton Works, repaired and should be good for some years of service yet. Good luck to her !

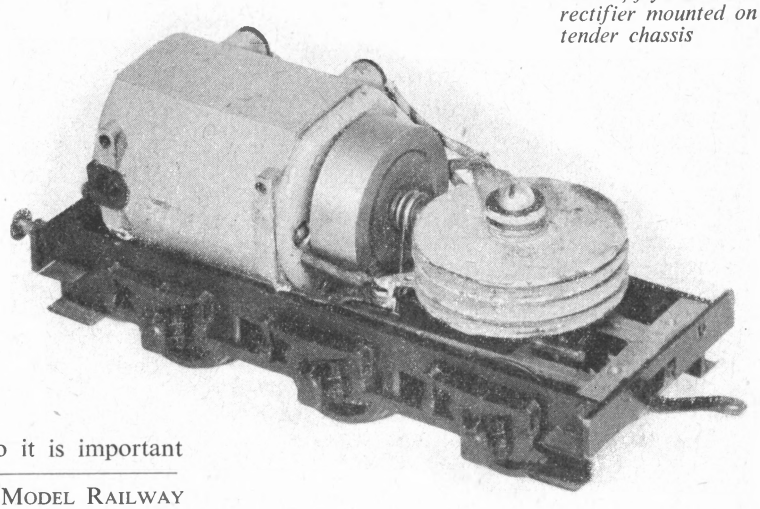
This is "O" Gauge

by M.H. Cox

SOME months have gone by since I wrote the last of these articles, due, I must admit, to a certain reluctance to being indoors during the summer evenings. During these months I have spent a little time visiting a number of model railways that I know, or have been invited to see, and I have also driven a number of the larger gauge small steam locomotives. In many cases I have been struck by the undoubted fact that many people, even the 1 in. scale brethren, regard a tender only as a necessary evil to be pulled around behind, and not justifying the care in construction that is lavished on the engine itself. I do not mean necessarily that the tender does not look the part—many had detail work in profusion—but it is so often poor in construction both from the point of view of suitability of materials and general fit of the running parts. One in particular, the tender of our L.M.S. " Duchess " class locomotive, was complete in every detail down to lamps, fireman's tools, and, I believe, an oil can. The underframes, however, were cut from an old cocoa tin and were very flimsy, and there was so much end play in the axles that the tender followed its engine like the wagging tail of an exuberant puppy. The rattling noises that accompanied its progress are better left unmentioned, and yet the proud owner boasted of the silence of the motor in the engine !

This method of tender building is even more futile in the case of the engine we are building, as this tender contains all the vital equipment that makes the thing go. It contains the motor and its flywheel, the rectifier that reverses the motor, the first stage of the gearing, and also the collector system. As a first consideration, therefore, it must be robust in construction, if only to carry the weight of the components. Secondly, between the engine and tender is a flexible drive, so it is important that the tender should not be able to " wag."

A third consideration, peculiar only to the motor tender of this type, is the restriction of noise due to the motor and gearing. A metal tender body makes an excellent sound box and will amplify any noise made inside it. It is most discouraging to have the motive power unit complete and tested with the locomotive chassis, only to find that when the tender body is fitted, the unit sounds like Donald Duck in a rage. The solution of this problem has given me no little trouble and I have eventually come to the conclusion that two things are essential. The first is to prevent audible frequencies of vibration from being transmitted to the body, and the other, is to eliminate mechanical noise from bearings and gearing, as far as possible. For most normal purposes the mounting of the motor and gearing unit on rubber mountings will be found sufficient especially if you can beg, borrow or steal a fibre idler wheel for the gear train. A common pattern of now obsolete car windscreen wiper contains a suitable gear. I have, however, been experimenting with another system that shows great promise. This employs a spring belt drive running on a small motor pulley of hard rubber and a metal driven pulley. I am not going to



Motor, flywheel and rectifier mounted on tender chassis

Continued from page 104, THE MODEL RAILWAY NEWS, *May*, 1952.

MAKING AN "O" GAUGE EX-N.E.R. 0-8-0 GOODS LOCO.

THIS MONTH: TENDER CHASSIS

describe this now, as I wish to complete certain long distance tests with a heavy load.

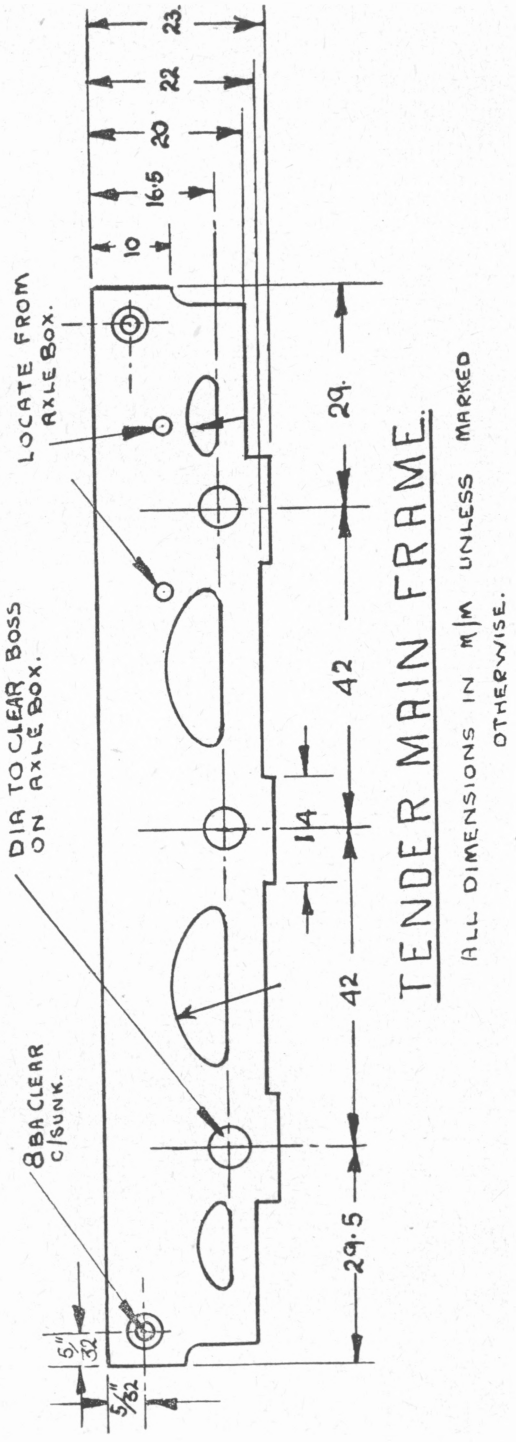
The construction of the tender starts in the normal way with cutting out the side frames, and this should be done in the same way, and from the same material, as the main frames of the engine.

Cut to the outline shown in the drawing. Tender frame openings, I find, are easiest cut out with a fret saw, or coping saw, using metal cutting blades, these are sometimes known as jeweller's saws. The sizes and positions of the holes for the little lugs on the back of the axleguards are not dimensioned because these must be drilled to suit the guards that you are going to use. I may be wrong but I don't think the correct guards for this engine are marketed, but a little ingenuity and patience can be employed to modify "foreign" guards to the correct appearance. The ones I had to use involved far too much work and I am sure better ones can be had, so I will not quote the type I used. I had to use springs from one type, and journals from another, and modify both into the bargain—expensive and too much like work. Going back to the holes, it's better to make these a bit oversize rather than put any strain on these little die castings —they resent it. Solder the backs of the lugs from behind the frames and solder the journals into their holes.

The frame stretchers, with which are combined the draw beam and rear buffer beam, are best made from $\frac{5}{16}$ in. square brass. The buffer and draw-beams are cut from $\frac{5}{16}$ in. $\times$ $\frac{1}{16}$ in. brass strip, and are sweated to their respective stretchers. In the case of the buffer beam, drill and tap the required holes for buffers, couplings and brake pipes. Dimensions are as per drawings. The cut away in the draw beam is for the flexible drive to the worm shaft on the engine.

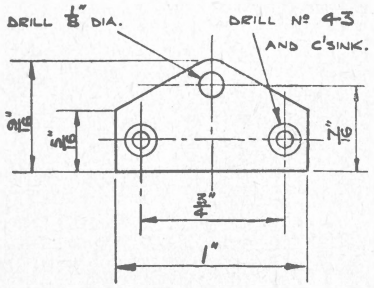
Next, cut out the little triangular plates, which carry the motor unit sub-frame. These must be screwed to the stretchers. The rear one screws on in the recess cut for it underneath the rear stretcher and the front one fits into the recess cut for it in the top of the front stretcher.

The frames and wheels may now be assembled using four 8-B.A. $\times$ $\frac{1}{4}$ in. c/s head screws. When doing this make sure that the leading and trailing axles have no excessive end play, they should be free to revolve, but with no end travel. The centre axle should be free to float endwise, and vertical play also should be allowed, this is to prevent the tender rocking about its centre axle owing to track



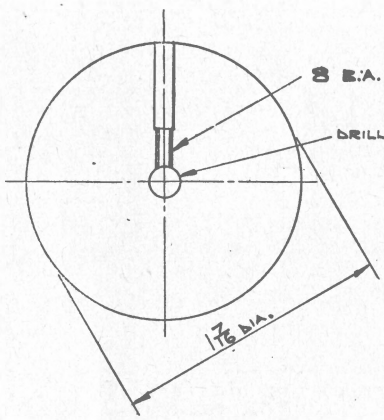
irregularities. If it can rock it will most certainly derail, as no track is perfect.

The motor unit sub-frames are made from two



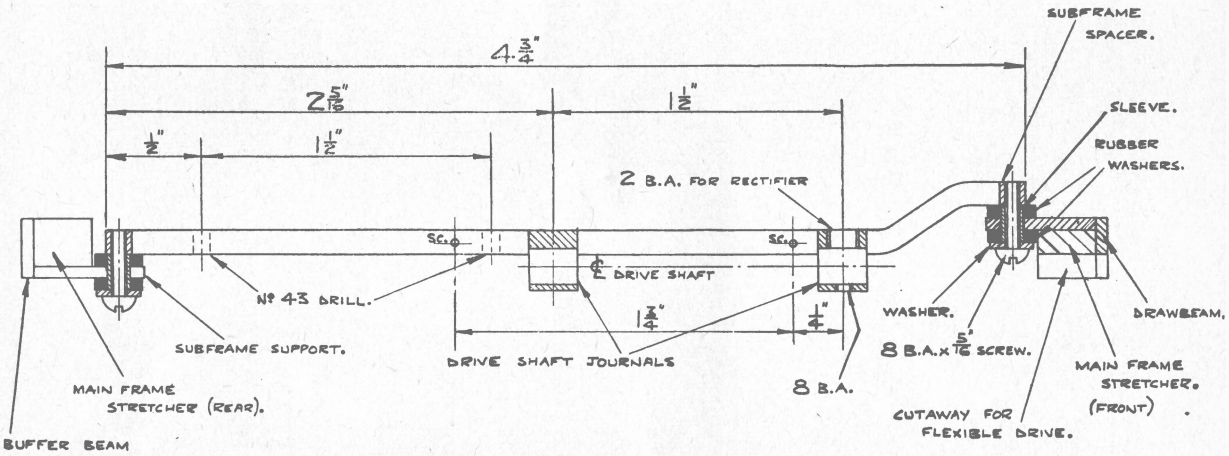
SUBFRAME SUPPORTS

2 OFF IN 1/16" THK. BRASS

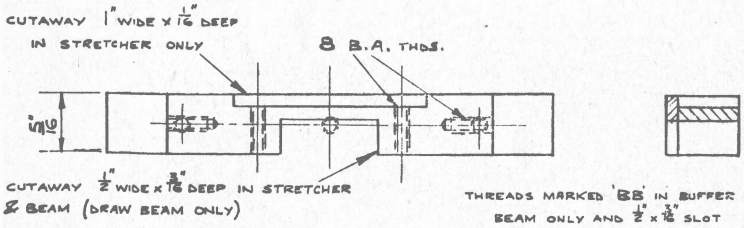


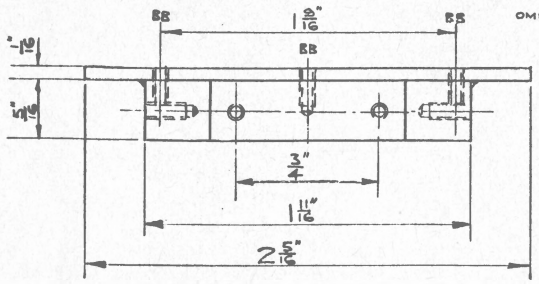
FLYWHEEL

FINISH 1/2" THICK.

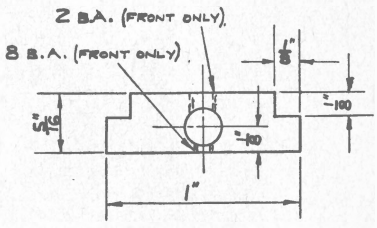


SUBFRAMES AND ASSEMBLY





MAIN FRAME STRETCHERS & BEAMS



DRIVE SHAFT JOURNALS

2 OFF IN 1/4" THK. BRASS.

$\frac{1}{8}$ in. square brass bars cut to a length equal to that of the outside frames less 1 in. Now bend these two bars together to the shape shown in the drawing. Make certain they are exactly the same. When held flat on the bench, it should just be possible to slide a piece of $\frac{1}{4}$ in. thick material under the raised ends. These two bars are spaced apart by two lengths of the same material $\frac{3}{4}$ in. long, between the extreme ends of the bar frames, they should be silver soldered, or screwed and sweated. In the centre of each of these cross pieces is an 8-B.A. tapped hole. Drop the sub-frame on to its bearers in the main frames, centre up and mark off through these holes on to the bearers. Remove sub-frame and drill through the marks in the bearers $\frac{1}{8}$ in. diameter. Turn up two little sleeves $\frac{3}{16}$ in. long, $\frac{1}{8}$ in. o.d. and drilled No. 43, or cut them from thin walled $\frac{1}{8}$ in. diameter tube. From a piece of rubber tube, I used old vacuum windscreen wiper tube which is of suitable size, cut four little rings or washers, $\frac{1}{16}$ in. thick, or a shade more, or cut them from rubber sheet $\frac{1}{16}$ in. or more thick. Now, with two 8-B.A. $\times$ $\frac{1}{2}$ in. cheese-head brass screws on which have been slipped large-diameter 8-B.A. washers (electrical type), fasten the sub-frame to the main frames so that they are insulated from each other by the rubber washers. Now check that the sub-frame unit has restricted movement relative to the main frames. There should be no looseness, but a positive " rubbery " feeling.

When you are satisfied about the mounting, dismantle the sub-frame from the main frames, and make up the two journals for the secondary drive shaft. Note that one has a 2-B.A. tapped hole drilled vertically in its top face. This is for the rectifier mounting and an 8-B.A. in the lower face. Slip both over a piece of 3/32 in. rod to keep them in alignment and sweat them into the sub-frame in the position shown in the sub-frame assembly drawing. Now drill the four holes shown for the motor screws. If you are using stud contact collection, drill the four holes marked *s.c.* in the drawing, using a No. 60 drill. If you use outside third rail, I leave it to you to sort out the collector mounting, I have rarely met two people who fancy the same type of third rail collector, so fit your fancy in whatever way you please. We are now ready to fit the motor and rectifier units and the primary drive. The motor must, however, have certain modifications made to it before it can be used, and this work will be described next time. Meanwhile, the tender steps may be soldered direct to the frames. Buffers and couplings may be fitted, and the coupling between locomotive and tender made up. This is a strip of 7/32 in. $\times$ $\frac{1}{16}$ in. brass and is fastened from the 8-B.A. hole under the front drive shaft journal, to a pin under the rear frame stretcher on the locomotive.

(*To be continued*)

Modelling Railway Rolling Stock in Cardboard

(*Continued from page* 146)

figures. The transfer is then allowed to dry overnight and the areas surrounding the letters and those between them are then carefully sponged with a dampened tuft of cotton wool to remove surplus glue, after which the transfer is allowed to dry off.

The body is then ready for final varnishing as required. It may be thought that transfers affixed by this method might not be permanent but I can assure readers that from trials carried out, the transfer " bites " right through the paint to the body. In one instance, on a metal coach, the body paint could be removed with " Strypit " leaving the transfer showing on the bare metal, necessitating removal with emery cloth. It is, however, advisable to protect the face of the transfer with some sort of varnish to avoid damage—Eggshell for freight vehicles and semi-gloss for coaches.

Conclusion

The subject of modelling rolling stock in cardboard is a very wide one which is still being developed and I can assure readers that the work is very much easier to do than to describe. There are many workers now engaged in carrying out experiments in this work and I would appeal to them to publish their work to save duplication. I was recently loaned a volume of the " Model Railway Constructor " for 1946 and came across an article, by Mr. P. R. Wickham, on the subject of cardboard modelling. On reading this carefully, it appears that we have both, quite independently, been working along similar lines and our methods only differ in detail but the general principles are the same. I would advise any readers who may be interested in this subject, to read the article in question and choose for themselves which of our methods suit them best.

I hope that I have succeeded in showing readers some of the ways in which it is possible to build both freight and passenger stock which will both look well and, provided due care has been taken during assembly (particularly the treatment with shellac) will last a lifetime. I have coaches which I built in 1938-39, one of which is illustrated, and, apart from the roofs being decidedly dirty, they look as good as the day they were built.

I have used similar methods for detailing commercial coaches and am now applying them to coaches built up from C.C.W. parts.

With the Editor's permission, I hope to be able to describe such detailing, with photographs, at some future date.

WITHINGTON STATION (Ex-M.R.)

THE photographs and plan (not to scale) show Withington and West Didsbury, a typical Midland suburban station about four miles outside Manchester on the main line to Derby. It was built towards the end of the last century and is in its original condition except that some of the platform awnings have had to be removed.

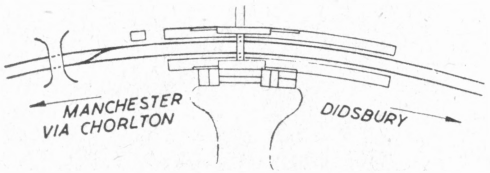


Diagram of Withington Station (not to scale)

It should be particularly useful for model railways needing a plain double track intermediate station because there are no sidings and therefore the site required would not be very wide.

There are many types of engines regularly working through Withington—mainly 4-4-0 compounds and Stanier 2-6-2 tanks on the locals as well as some of the new Class 5s. On the expresses there are Jubilees, mixed traffics and the diesels, after overhaul at Derby. Goods traffic is worked by the usual 2-8-0s, 0-6-0s and 2-6-0s of L.M.S. design. Of recent months there have also been ex-G.C. 0-6-2 tanks and 0-6-0 goods as well as G.W. corridor coaches on some locals, all providing a fair variety of stock.

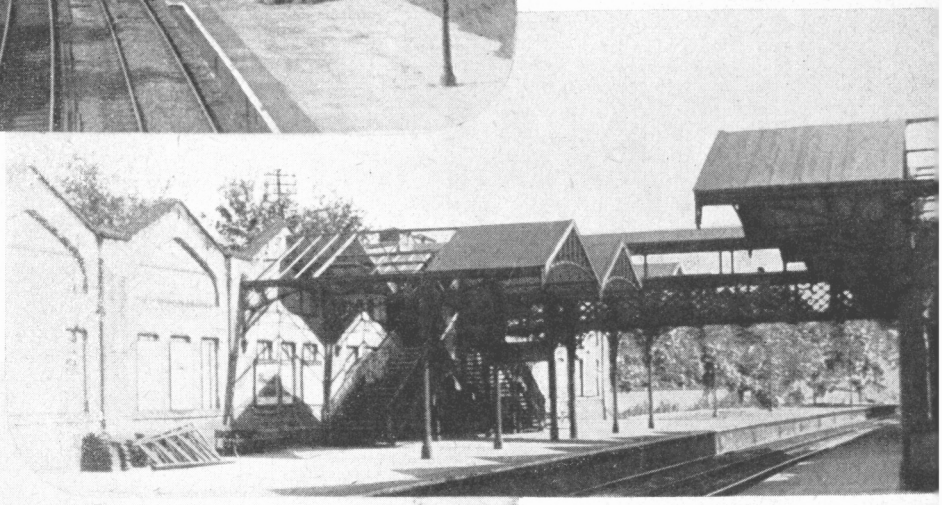
Signal box

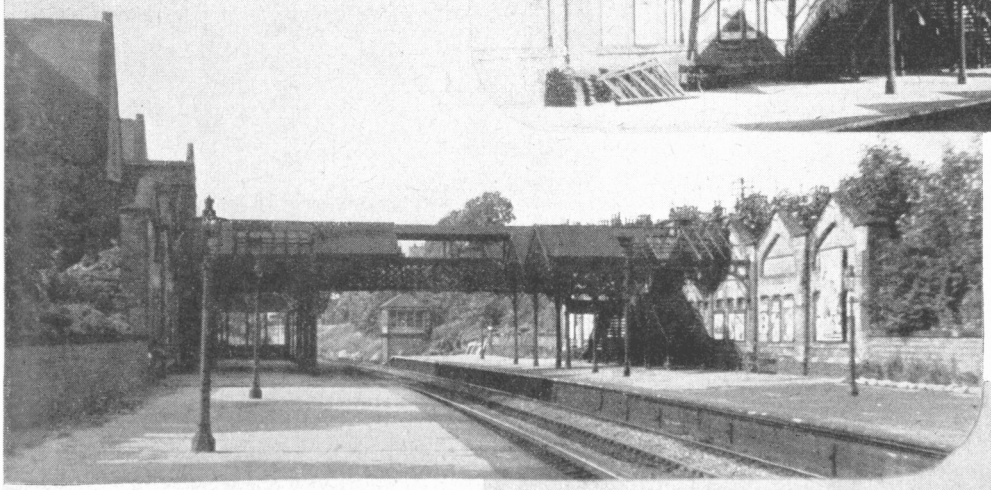
Below; Typical local train headed by Stanier 2-6-2T No. 40124 runs into the station from Manchester en route to Stockport and Cheadle Heath

Prototype Photos from N. F. Dyckhoff

Left : View towards Manchester from footbridge showing crossover and road overbridge

Right : Platform shelter and footbridge looking towards Didsbury

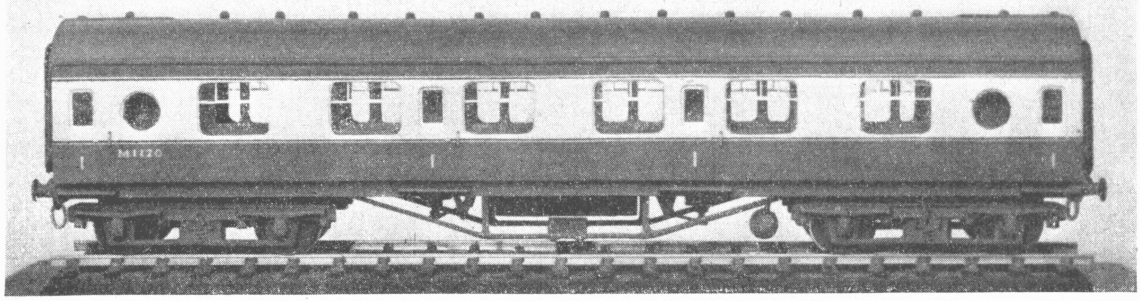




Left : Other side of platform shelter and footbridge (looking towards Manchester) Main station buildings on left

Right : Main station buildings. View from approach road

Talking Shop



ASSEMBLING A "RATIO" COACH KIT

SO far, the range of 4 mm. scale "RATIO" coach kits (THE WEBSTER DEVELOPMENT COMPANY), includes Eastern and London Midland Regions post-war flush-sided stock, a G.W. trailer coach for auto trains and a main-line "Toplight" series, as well as some Southern electric suburban stock.

Each kit includes the two sides in laminated ply with window and door openings cut-out (including toplights in the G.W. coaches), the interior corridor partition, the roof moulded to shape, floor, solebars, buffer beams (metal), and small squares of wood for the ends. A glazing strip is supplied for each side. The sides, roof and floor are provided with tongued and grooved joints.

Here, very briefly, is how to put together one of the London Midland Region 57 ft. side-corridor coaches. This is a straightforward flush-sided job, so no card framing is required to simulate panelling, as is the case with the G.W. and Southern coaches. The methods I've used are slightly different from those described in the "RATIO" instruction sheet, so you can choose between the two.

First of all, get a drawing of the coach you are going to build. This is essential if a good model is to be made. Now, open up your kit, spread the parts out on the table and have a good look at them all—have it quite clear in your mind's eye how the coach goes together. Fig. 1 will show you the standard "Ratio" assembly methods. Take out all the wooden parts except the four square sheets for the ends and remove the glazing strips from the sides. Generally clean up, sandpaper and prime the sides, roof, floor and corridor partition except on surfaces to be glued. ("Ratio" red-oxide primer is available, which I have used and can thoroughly recommend.) Score the door joints on the sides before you prime.

Drill the floor to receive fixing bolts for the buffer beams and bogie bolsters. Fit buffers to the beams, then fit the beams to the floor and fit the bolsters. "Solid" couplings can go on now, but if you want spring couplings, fit them after painting so that the springs and sliding surfaces are not gummed up.

Underframe details seem to worry some people but there's an easy way out. I find it most convenient to fit a thin metal sheet under the floor to which all the central features (brake gear, dynamo, battery boxes, truss rods) are soldered. Fix this plate by drilling three holes through the floor and corresponding ones in the plate—exact position doesn't matter. Insert three brass nails through the top of the floor and solder underneath to the plate, then clip off the surplus nail. Make sure the plate is not so wide that the solebars cannot be fitted close enough together when the time comes to fix them.

Truss rods—another problem? No! Copper wire of about 18 or 20 s.w.g. (depending on the type of coach modelled) can be flattened out on a metal block by tapping with a hammer (Fig. 2) until the correct thickness is obtained. You'll soon get the knack of it. Actually, these truss rods should be angle iron, but most modellers will be content with plain rectangular section. The remaining underframe gear is available commercially or can be made up if the builder is so inclined.

Take the compartment side, replace the glazing strip and glue the side to the floor. See that it is on the right side of the floor in relation to the underframe details of which the dynamo, at least, is "odd." Leave this joint overnight to dry really hard.

It is easiest to fix interior details now. The kit doesn't include compartment partitions, so if you want these you must make them. 1/32 in. balsa sheet is quite strong enough and can be cut up in a few minutes; sand and prime. Fix these, the corridor partition and any other interior details *now*. Some quiet nice seat mouldings are included in the "Ratio" range if you want to fit these.

When the interior is finished and painted to your liking, replace the glazing strip in the corridor side and glue this to the floor allowing time for complete hardening as before.

Mark off and drill along the roof for ventilators. Make

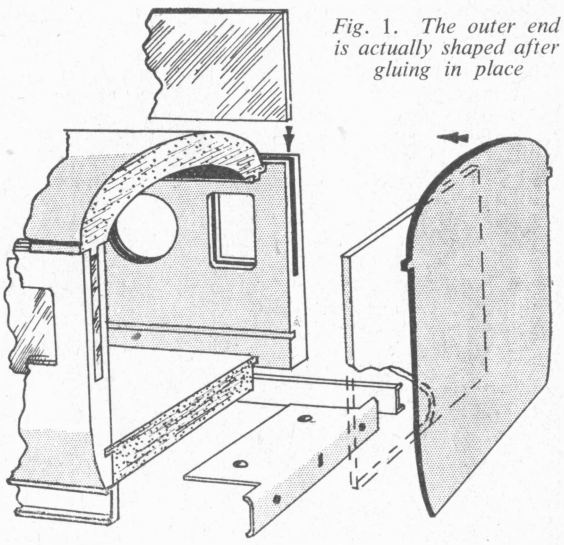


Fig. 1. The outer end is actually shaped after gluing in place

the holes a tight fit so that the vents can be pressed in and held for good without gluing, but don't put them in yet. Paint the inside of the roof white, taking care to avoid the gluing surfaces. The roof is now ready to be put on. Try it in the grooves of the sides for fit and length. If it's all right glue and ease into position. Make sure it is exactly in the right place longitudinally and see that the sides are pressed closely into the roof under the gutter. One way of ensuring this is to place a strip of card along the top of each

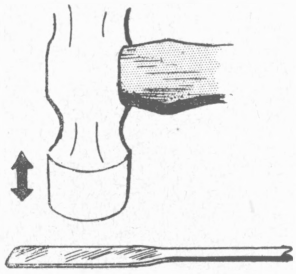


Fig. 2. Shaping the truss rods. Prototype has L section but most people make do with this method

side at least as thick as the gutter, and bind the whole body round with bandage or tape until the glue has set.

The inner ends are now cut carefully to a square shape which will fit in between the sides, roof and floor. Paint the inner faces with the interior colour and glue in with the outside face flush with the ends of the sides, roof and floor. Shape the outer ends roughly—about $\frac{1}{16}$ in. larger all round, except at the bottom which should be flush with the bottom of the floor. Glue the outer ends on and allow to dry hard. Many people abhor the use of a metal file on wood, but I am convinced that this is the easiest way of finally shaping these ends, as shown in Fig. 3. If there is a slight crack along the vertical joint, fill with putty or similar filler, sand-paper, then prime.

The solebars can now go on. Clean away any surplus glue from the underside joint of the sides and floor—the solebars will cover this joint. Check the length of the solebars so that they fit snugly between each buffer beam. Glue in place.

Cut footsteps from card or, preferably, 1 mm. ply (which can't " burr " at the corners like card) and glue into correct positions on the solebars. Corridor connections are next. There are many ways of making these and several have been described elsewhere. End steps and handrails make all the difference to the coach and prevent that " plain-end " appearance. Now the ventilators can go in the roof—just press them nearly home with pliers. Check up on alignment and squareness. When correct, press them in the last little bit, looking along the roof afterwards to see that they are all the same height.

The holes for door handles and grab irons should be drilled in the side. These fittings are put in after painting and lining. Make the hole a tight fit so that no glue is required to hold the fittings in.

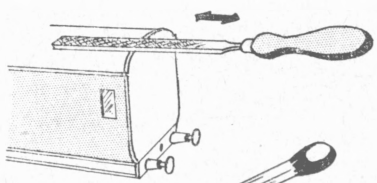


Fig. 3 Filing the end to shape

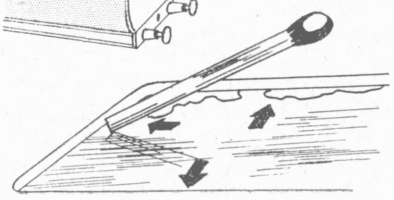


Fig. 4 Cleaning paint off windows

Your coach may now be rolled into the paint shop. Now, I don't want to " put anyone off " but, quite seriously, if the painting is going to be done properly it should take quite as long as the construction so far described. Remember, colour makes all the difference, and in the case of models its application can transform all your carefully done constructional work into an eyesore or a beautiful picture. Painting of models is a vast subject and I can only just touch on it here. Take your time, use thin coats of paint and allow each one to dry right out before applying the next. It is much safer, too, to use one of the recognised model paints (a " Ratio " range of paints is available). House paint is fine for houses but to put it on " OO " gauge coaches is asking for disappointment !

Nearly every model coachbuilder I've met has brought up the old, old subject of painting window frames without painting the windows as well. Perhaps the little dodge shown in Fig. 4 will help. I never worry if a bit of paint flows on to the " glass." It is easily pushed in towards the frame afterwards (before it is hard dry, of course) by rubbing the window with a matchstick, as shown. The wood is hard enough to shift the paint but not hard enough to scratch the window.

When the painting is completely finished, including a coat of varnish on the sides, the door handles and grab irons (filed up from brass pins) can be pressed into the holes previously drilled and spring couplings fitted. Screw the bogies into the bolsters, check buffer height from rail level. After final inspection your coach is ready for service.

Exley G.W.R. Ocean Mails Van

Here's another price reduction. On March 3rd, the price of the above " O " gauge van, marketed by MESSRS. EDWARD EXLEY (SALES) & CO., was reduced by 6s. 1d. The customer now pays £3 0s. 0d. plus 13s. 4d. tax.

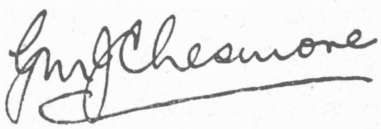
Catalogue Received

The 1952 E.R.G. CATALOGUE AND MANUAL. 88 pages, size 11 in. × 8 in. The price is 3s. 6d., which is higher than that of previous manuals. E.R.G. ask me to point out that the rising cost of paper and printing has forced this on them but the price charged is still considerably below the actual cost price of production. The manual is in the same clear style of previous editions and provides plenty of information and interesting reading about " OO " gauge. The loose-leaf binding is used again so that later lists can be bound in by the customer.

Walthers TS-5 for this Country

KIRDON ELECTRIC LIMITED tell me that they have signed a trading agreement with Wm. K. Walthers Inc., of Milwaukee, U.S.A., for the manufacture of the TS-5 twin solenoid switch machine in this country.

The TS-5 is a point motor, which, when fitted with an attachable contact set, can be used at the same time as a relay or it can be used as a relay only, operated by the trains. The applications for this machine cover practically all automatic circuits or semi-automatic circuits involving signal and point operation and automatic train control.



EDITOR'S MAILBAG

"OO" Gauge Automatic Couplings

DEAR SIR,—I write to ask if any of your readers can help to solve a problem which, in spite of our efforts, appears to loom as large as ever.

My sons and I run a small Trix Twin layout, but like many other Trix owners we find that other makers of accessories offer something that we find "wanting" in what we have.

"Trackmaster" rolling stock offers detail in relief which some other makes do not possess while Hornby Dublo offers better chassis work to coaches and wagons.

We have overcome the wheel difficulty by using Acro's Trix wheels with trucks of other makes, but we are unable to cope satisfactorily with the automatic coupler problem.

Peco attachments do not appear to be foolproof; in fact, the little spring-held stud which secures the coupler to the truck body is anything but secure. Hornby Dublo automatic couplers have only one projecting flange to the link proper, and thereby will not successfully engage with Trix couplers which have two in a vertical plane.

If then, any help could be forthcoming from amongst your numerous readers, we should be very grateful.

Yours faithfully,

Newmarket, Suffolk. J. FULLERTON.

Appreciation

DEAR SIR,—As a regular reader of very old standing, may I ask you to convey to your contributors Mr. P. B. Denny and "Pandora," my keen appreciation of their most interesting working time tables. I feel that the reproduction, so far as possible, of actual railway traffic working, offers a wide scope for all sorts of ingenuity, and affords a large degree of satisfaction.

Your contributors' articles have done much to refresh my efforts to re-create my own pre-1939 "O"-gauge semi-outdoor line heavy going in these difficult and busy days. As my *pieces-de-resistance* are a "Lord Nelson" and a "Shire," the general idea is to build up around an appropriate inter-change station, such as Banbury.

Long may the "M.R.N." prosper!

Yours faithfully,

Parkstone, Dorset. H. P. W. MATTHEWS. (Major, retired.)

Brake Van Literature

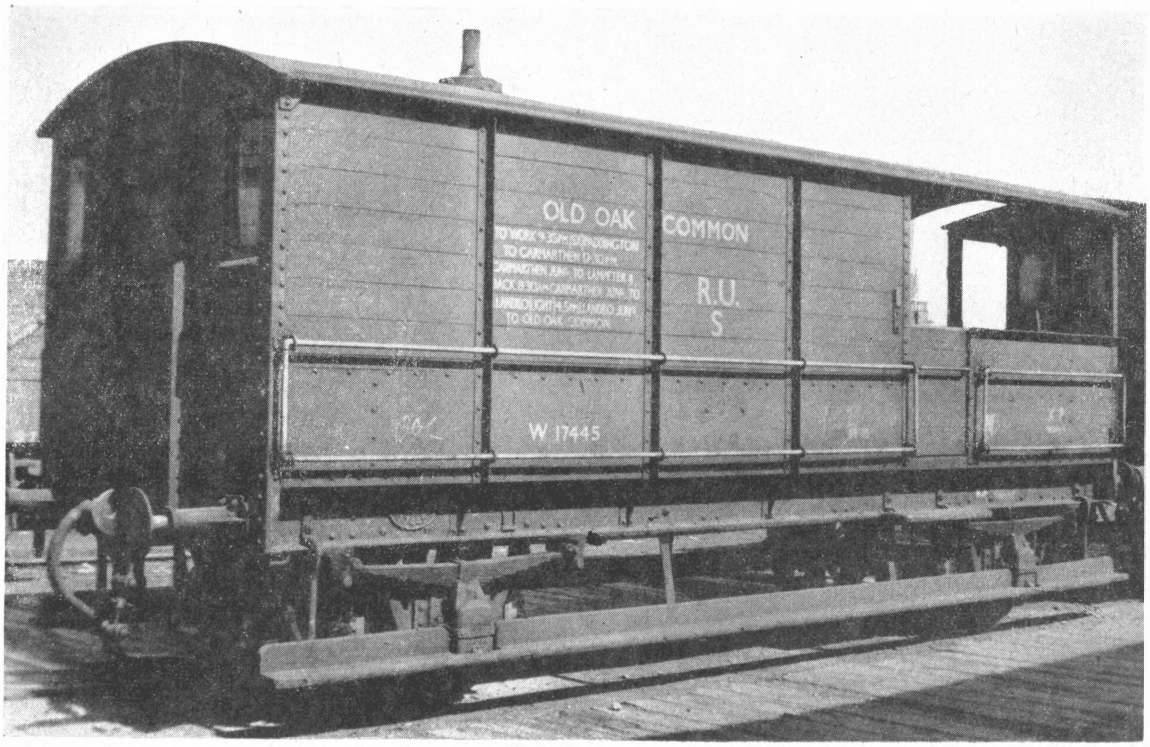
DEAR SIR,—I am sending herewith a photograph of a G.W. 20-ton brake which shows an interesting detail not previously noted. I refer to the working movements painted on either side of the van, which, for better or worse, give an insight into goods traffic operation which is normally denied to most of us!

The wording is as follows:

"To work 9.35 p.m. (SX) Paddington to Carmathen. 12.30 p.m. Carmarthen Junction to Lampeter and back. 8.30 a.m. Carmarthen Junction to Llandilo (light). 4.5 p.m. Llandilo to Old Oak Common."

Yours faithfully,

London, S.E.6 A. G. THOMAS.



FOR THE BOOKSHELF

Building and Laying "O" Gauge Trackwork, by E. F. Carter. (London: Percival Marshall & Co. Ltd.). 105 pages, size 5 in. by 7½ in., 2 folded and 8 art-paper inserts for illustrations. Price 9s. 6d. net.

The basis of good running on a model railway lies, first, in faultless track and, secondly, in correct dimensions of wheels and flanges. The first of these two considerations is the subject of this new handbook, and is dealt with primarily from the practical point of view. The text is both descriptive and constructive, supported by numerous lucid diagrams and drawings, some of which are reproduced full size for "O"-gauge on folded plates. A notable and useful feature is that all the photographic reproductions show examples of prototype practice, some of which are typical layouts of points and crossings while others are close-ups of details. The book is to be confidently recommended to every enthusiast who aims, and should aim at having his trackwork laid according to the fundamental requirements of this most important item of railway engineering.

London's Underground. By H. F. Howson. (London: Ian Allan Ltd.) 144 pages, size 5½ in. by 7½ in. Illustrated. Price 12s. 6d. net.

At the present time, the railway system which is known far and wide as "The Underground," consists of nearly 250 miles of railway owned and operated by the London Transport Executive. To most of the millions of passengers who use some part of this great system every day, it is just a matter of course, a rapid and reliable means of rail transport from one part of the Metropolis to another; the visitor to London, from the provinces or from overseas, is apt to regard the Underground with wonder and admiration, even with a certain amount of bewilderment. It is safe to assume that very few of these millions of passengers give so much as a single thought to what lies behind the mere fact that their journeys are rapid and absolutely safe; even when a failure does occur—which, in the circumstances, is remarkably seldom—there is no imminent danger. It is high time that the general public were acquainted with the means whereby travel on the Underground has been brought to its present state of efficiency, and this book goes a long way towards that desirable end.

Written in the popular non-technical language, it tells a remarkable story which stimulates interest and reveals a wonderful picture of steady development, from the early and somewhat uncertain beginnings until the present day, and goes on to outline the plans for future extensions. Every facet of the organisation which ensures the safety and convenience of the passengers at all times is duly recorded in the book.

There are over 100 illustrations, some in half-tone, others in photogravure, on 32 inset pages, and these are an education in themselves; they depict rolling-stock from the earliest to the latest, track and tunnel scenes, stations, safety devices and other important features, most of which can be seen by any traveller—but probably pass unnoticed by most—in whose interests they are installed. We think this book should command a wide sale, not only among enthusiasts, but also among a very large section of the travelling public; it is essentially readable, thoroughly informative while remaining a model of conciseness.

WITH THE CLUBS

Epsom and Ewell Model Railway Club

At our meeting on July 17th, Mr. A. S. Hall will suggest various methods and materials for the construction of baseboards for indoor layouts. To those who believe that the premises should be made to suit the layout Mr. Hall will indicate the structural alterations which can safely be made.

The members will welcome visitors to their meetings which are held at 7.30 p.m. on the third Thursday in each month at Pit House, Cheam Road, Ewell.

Hon. Secretary: P. D. McCANN, 115, Elmstead Gardens, Worcester Park, Surrey.

Orpington & District Model Railway Club

We have now obtained a permanent clubroom on Chislehurst Station. Meetings are held on Friday evenings from 8 to 10.30 p.m. A "OO" gauge layout has been commenced and "O" gauge test tracks are to follow.

Shed visits are being arranged during the summer. New members are wanted and should contact the secretary, Mr. C. J. BLAMEY, 78, Belmont Lane, Chislehurst, Kent.

Croydon Model Railway Society

Forthcoming events are a talk to be given by Mr. M. G. Foster, on Wednesday, July 30th, entitled "The Application of Electric Power to Model Railways" and another by Mr. F. N. Hewitt on Wednesday, September 24th, on "The Use of Small Tools for Model Making." We are always pleased to see visitors at our clubroom on No. 1 Platform, Purley Oaks Station, on the evenings of the second and last Wednesdays of the month. Hon. Secretary: A. J. C. R. GOODALL, 68, Purley Downs Road, Sanderstead, Surrey.

West Wickham Model Railway Club

The club has now acquired a plot of land in West Wickham on which to build a hut and plans are going forward for its erection. On September 20th, the club will hold its annual exhibition in the Large Lecture Hall, Sussex Road, West Wickham, from 11 a.m. to 9 p.m. Anybody interested in exhibiting any models in this show will perhaps contact the club secretary, H. HAWKINS, 37, Pickhurst Rise, West Wickham.

NOTICES

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The Editor invites correspondence and original contributions on all aspects of model railways from ½ in. scale to 2 mm. scale, and on suitable prototype subjects which should be addressed to him at 23, Great Queen Street, London, W.C.2. Matter intended for publication should be clearly written, and should invariably bear the sender's name and address.

Readers desiring to see the Editor personally can only do so by making an appointment in advance.

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The utmost care is taken to exclude announcements from doubtful sources, but we cannot accept responsibility or guarantee the good faith of advertisers.

The Sports Depot (M/C) Ltd. for bargains in Gauge "O" and "OO" locomotives and accessories, new and second-hand. B.L. "Flying Scotsman" clk. L.N.E.R. £5 5s., B.R. colours. 4-4-0 as new clk. locomotive and tender £3 15s. Tinplate rails from 4d. each. Points from steel rail from 12s. 6d. Hornby trucks from 2s. each, new from 4s. 4d. each. 4 cpld. 18 m/m St. R. Mech. 12 V, d.c. 45s. Rovex locomotives new 43s. 10d. New Graham Farish and Hornby-Dublo sets. WE PURCHASE Trix Hornby-Dublo, etc. locomotives and accessories. Send your goods for disposal on to us for quotation.—4/10, PRINCESS ROAD, Moss Side. Manchester Tel.: MOS 1757.

R. G. Dettmar & Co. Specialists in "O" gauge. The Read Maxwell motor unit as used by British Railways on their exhibition layout can be obtained from us price 67s. 6d. plus 9d. postage. A magnificent 5-pole precision built job at a reasonable price. Full range of cast-iron wheels with squared location, stud contact collectors, chassis, overhauls, rebuilds and repainting. New locomotives in "O" gauge to a high standard of construction. Pre-group a speciality. Stamp brings details of our "O" gauge activities. All enquiries to—R. G. DETTMAR & Co., The Model Railway Engineers, Ashtead, Surrey.

Staffordshire Model Shop. Est. 1936. Model railwaymen always welcome. Permanent "OO" layout. Open daily.—J. W. BAGNALL, Borough Carriage Works, South Walls Road, Stafford. Tel.: 420, M.E.T.A.

West of England Modellers should send their requirements to—HARRIS'S TOY SHOP, 32, Chapel Street, Exmouth. Phone: 2028. Agents or stockists for all the principal model manufacturers.

America's Most Authoritative Magazine "Model Railroader" one year post free 32s. Back numbers, 3s. each. Free booklet of other American magazines from—WILLEN LTD. (Dept. 42), 101, Fleet Street, London E.C.4.

Transformers for "direct" or "split potential." Rectifiers, auto cut-outs, ammeters, volt meters, reversing controllers, power units, large stocks. List, s.a.e.—HARRY GILPIN, 76, High Street, Walton-on-Naze, Essex.

Henry Greenly drawings in "O" and "1" gauge, locomotives, coaches, permanent way. List 2½d.—GREENLY, 66, Heston Road, Heston, Middx.

Handyman's Shop, 27, Blakey Moor, Blackburn. Agents for Acro, Peco, ERG, Walkers, Wrenns, Hamblings, etc. Hardboard strips (all sizes for tracklaying.)

Torbay Model Railway Supplies for everything "OO" including all Graham Farish range.—59, Victoria Road, Ellacombe, Torquay. Phone: 7764.

Pre-Grouping Coaches. "OO" card parts, all panelling embossed, N.E.R. 32' six-wheel brake van, 3s. 6d. Thirds clerestory, G.W.R. 46' 6", 4s. N.E.R. 45', 3s. 9d Six-wheel L.S.W.R., G.N. of Scotland, 2s. 6d. per set. Post 3d.—HANSON, St. Agnes, 57, Sutherland Avenue, Fenham, Newcastle-on-Tyne.

Bond's and Peco "OO" nickel silver rails, sleepers, chairs, etc., sufficient for 12' three-rail track. Unused. 45s. or s.a.e. for list.—ANSTEY, "Vaynor," Radbrook Road, Shrewsbury.

Lionel Four Car Frieght Set with track. New and unused 2-8-4 locomotive, smoke. Cheap.—BoxNo. 6443, MODEL RAILWAY NEWS Offices.

As New. "OO" two-rail equipment, locomotives, coaches, points, etc., for sale or exchange for "O" gauge. S.A.E.—BLANCH, 105, Boundary Road, Hove, Sussex.

Gauge "O" Electric Track, Engines and Rolling Stock For Sale. 150' of Bassett-Lowke steel track with brass centre rail and 11 all brass points on baseboard. One Bassett-Lowke S.R. 0-6-0 tank engine as new and one 4-4-2 tank engine (new L.M.C. motor), 4 coaches, 11 trucks. Prepared to separate. Cost over £60. Offers to:—J. RENDELL, Byeways, Wick, Devizes, Wiltshire.

Gauge "1" Bassett-Lowke 4-4-0 tender clockwork Midland Railway, brand new, £12. Hornby Dublo transformer, 30s., controller, 30s., brand new—THOMAS, 3, Station Road, Fulbourne, Cambridge.

Gaiety Pannier Tank, fitted two-rail Reidpath drivers, £3.—305, Ainsworth Lane, Bolton.

Gauge "O" Locomotives, rolling stock, truck, accessories. B/L and L.M.C. Reasonable prices. Send for list.—31, Comforts Avenue, Scunthorpe.

For Sale. "OO" Equipment. Over £50 worth two- and three-rail "OO" locomotives, rolling stock, accessories. S.A.E. for list—P. ARMSTRONG, "Pembroke," Shelburne Road, High Wycombe, Bucks.

Gauge "O" Clockwork Railway, Hornby Bassett-Lowke. First offer, £24. Details, s.a.e.—Box No. 6447, MODEL RAILWAY NEWS Offices.

"OO" Scale Locomotives at attractive prices. Hand built. Detailed 2- and 3-rail. Good selection all regions. Stamp details.—Box No. 6450, MODEL RAILWAY NEWS Offices.

"OO" 16.5 mm. 3-Rail, L.M.S., 4F 0-6-0, detailed £8; L.M.S. 2F, 0-6-0 detailed, £7, Reidpath 0-6-0 Tank, £3; G.E.M. signals, 4 arm gantry, 30s, 3-arm bracket, 25s. 6 curve track, £1.—STAINSBY, 164, Alexandra Road, Peterborough.

Sale. Trix model railway equipment. Locos, track, points, etc. S.A.E. list.—Box No. 6454, MODEL RAILWAY NEWS Offices.

G.W.R. 16.5 mm. 2-rail. 12 different scale locomotives, 6 to 12 gns. Exley, Hambling coaches. S.R., L.M.S., litho coaches. Sold separately. S.A.E. list.—MULLIS, 18, Yewtree Road, Southborough, Tunbridge Wells.

Oliver No. 5 Typewriter, 3 bank. Exchange "OO" equipment.—156, Westbury Avenue, N.22.

For Sale. Complete "O" and "OO" gauge railways. "O" gauge Bassett-Lowke scale locos. All as new—some unused. Very large quantity brand new rolling stock—passenger and goods. Hornby pre-war steel track, points, etc. "OO" gauge all new Trix, 8 locos., large quantity track, points, etc. Wish to dispose complete, no space being available for running.—CLAPPERTON, The Mill House, Sandford-on-Thames, Oxon.

Gauge "1" Train set for sale, 2 engines (4-8-2) with motors, flexibly mounted in tenders, 15 trucks and coaches, 25 sets bogie wheels. Offers.—W.P., 53, Milton Avenue, E.6.

For Sale. Gauge "O" 12 V. electric goods set. Leeds 0-6-0 engine, 4 open trucks, 1 brake van, £9.—S., 130, Bayford Road, Littlehampton, Sussex.

Faced Cardboard Strips, suitable for all modelling purposes. (Buildings, trucks, sleepers, platforms, etc.).—S., 130, Bayford Road, Littlehampton, Sussex.

Sale. 16.5 mm. outside 3rd-rail Hornby "Duchess," Zenith motor bogie, coaches, etc. S.A.E. for list—NIX, 49, Wentworth Road, Barnet.

Bassett-Lowke, 2-6-0 L.N.E.R. steam Mogul, test run only, makers' guarantee, purchased May 25th, 1952, £12 10s. 0d., or exchange "O" gauge electric loco and rolling stock.—ROBINSON, 8, The Polygon, Eccles, Manchester. Eccles 3360.

1,000,000 Dental Burs available assorted shapes; ideal for fine precision drilling and cutting. Dozen 1s. 6d.; gross 10s.—ART-FORM LTD., Talbot Chambers, Shrewsbury.

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For Sale. 150 M.R.N.s, also Hornby-Dublo rolling stock and railway books. Send S.A.E. for list.—M. R. SOPER, 57, South Street, Andover, Hants.

Large "O" Gauge layout (dismantled). Value over £75, sell or exchange for large "OO" layout 2- or 3-rail. Full details, s.a.e. appreciated.—NICHOLLS, 5, Ethel Street, Walworth, London, S.E.17.

H.O. "Jubilee" L.S.W.R. locomotive by Miller Swan (6-volt 3rd rail) illustrated pages 113/114 "Beal's Railway Modelling in Miniature" (1st edition) a collector's model. Offers to—BACON, 33, Lode Lane, Solihull, Birmingham.

Sale. Bassett-Lowke six coupled clockwork mechanism, excellent condition, powerful, £2.—COCKSHOTT, 25, Elmwood Road, Eaglescliffe, Co. Durham.

For Sale. Numerous "M.R.N." "M.R.C." "R.M." "Rlys." etc. S.A.E. for lists.—Box No. 6471.

Lionel 4 ft. diesel streamliner articulated, illuminated, "O" gauge, 20 V. 30 ft. track, accessories, controller, transformer, £15.—WHEELER, 21, Adelaide Avenue, S.E.4.

"O" Gauge Surplus. Rustless rail 80 yds., 6d. yd. Few "I" gauge tinplate wagons, 3s. 6d. each.—W.G.K., 8, Haigville Gdns., Ilford, Essex.

Gauge "O" For sale or exchange G.I. Stanier 5P., £27; 2-6-4T £25. Leeds 0-6-0, three others Exley coaches. 30 trucks, etc. S.A.E.—Mackey Restoration House, Rochester.

Gauge "O" Caledonian "Cardean." Brand new. Detailed. Complete cab fittings. Clockwork, £15. L.N.W.R. Claughton, detailed electric, £14. Southern two coach electric, detailed, £3 10s. L.N.W.R. George V., rebuilt, detailed, electric, £7 10s.—S. D. BRAILSFORD, 17, Colbourne Road, Hove, Sussex.

For Sale. Gauge "O" Hornby "County of Bedford," coaches, mail van, wooden wagons, platform, brass keyed track.—RICHARDS, Mount Pleasant, Midhurst, Sussex.

"O" Gauge Track, rolling stock and electrical equipment for sale at half price. S.A.E. details.—PLANT, 11, Gwenbrook Road, Chilwell, Notts.

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Private Buyer Wants 12-gauge "OO" L.M.S. 2-rail Exley coaches, good condition or anything else for a beginner. Write—BEAMON, 16, St. James Place, Hanford, Stoke-on-Trent.

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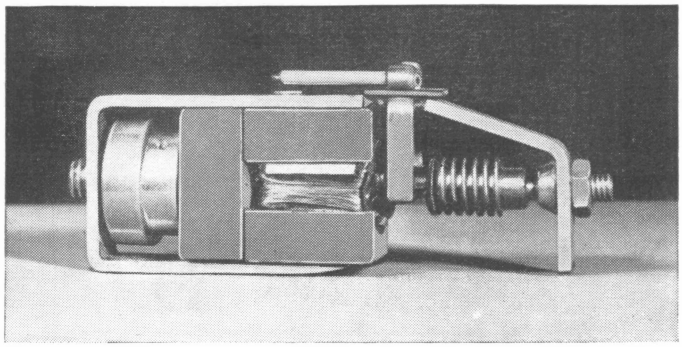

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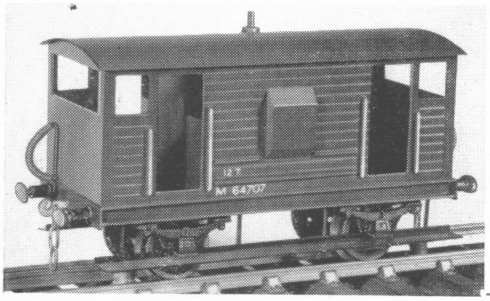

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